Repair-Parts

ProControl™ 1KS

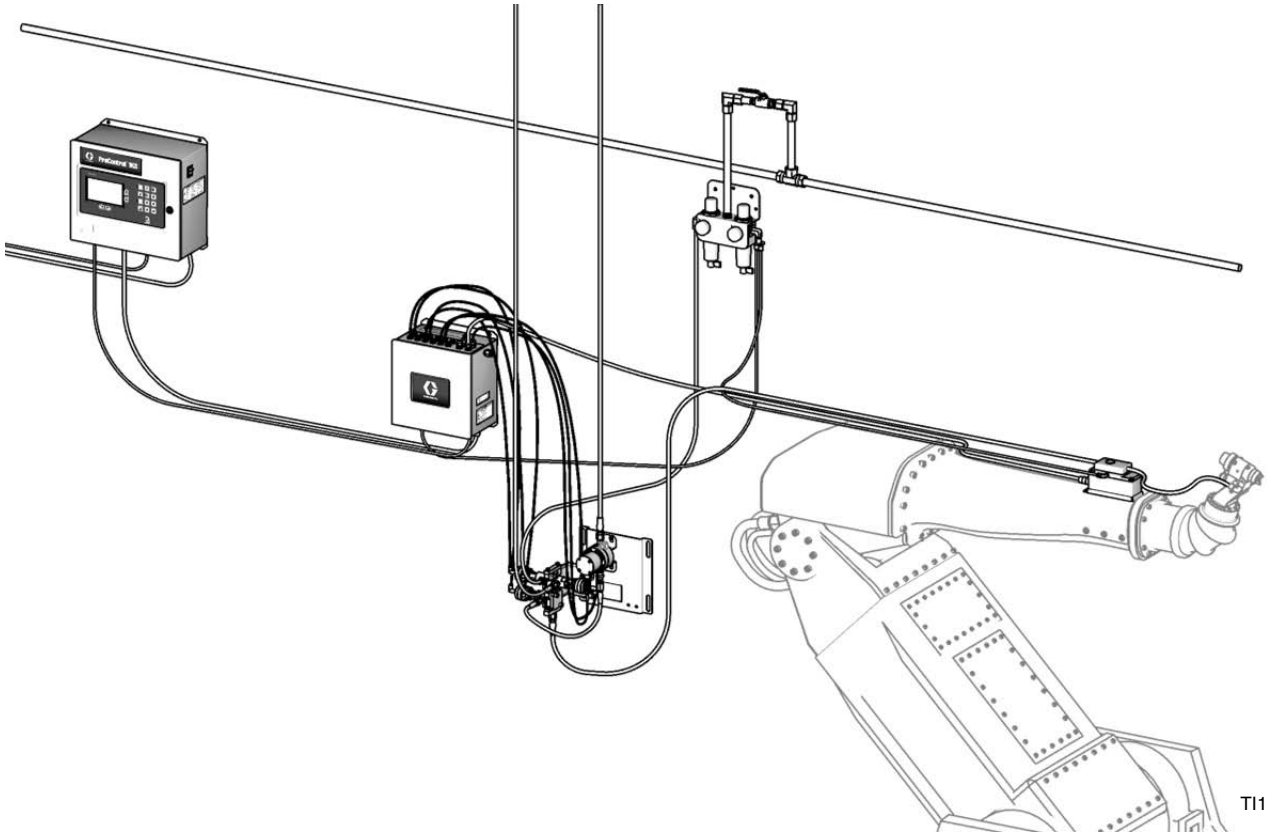
3A1164B
ENG

Automatic system for fluid management of single component coatings. Includes flow control, flushing, and color change. For professional use only.

For use in explosive atmospheres (except the EasyKey).

Important Safety Instructions
Read all warnings and instructions in this manual. Save these instructions.

See pages 4-5 for model information, including maximum working pressure. Equipment approval labels are on page 3. Some components shown are not included with all systems.



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PROVEN QUALITY. LEADING TECHNOLOGY.

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Related Manuals

Component Manuals in English

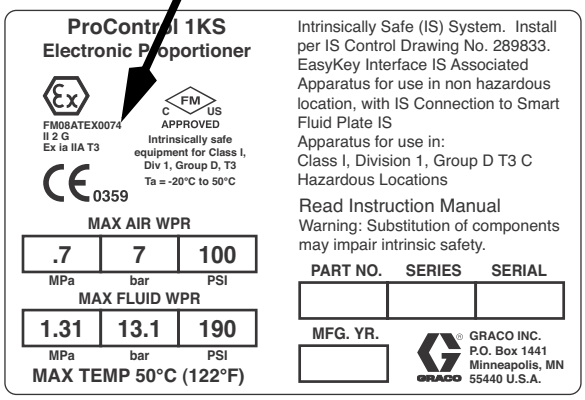
Manual	Description
3A1163	ProControl 1KS Installation
3A1080	ProControl 1KS Operation
312782	Dispense Valve
312783	Color Change Valve Stacks
312787	Color Change Module Kit
312784	Gun Flush Box Kits
310745	Gun Air Shutoff Kit
312786	Dump Valve and Third Purge Valve Kits
312785	Network Communication Kits
308778	G3000/G3000HR/G250/G250HR Flow Meter
313599	Coriolis Flow Meter
313212	Gun Flush Box Integration Kit
313290	Floor Stand Kit
313542	Beacon Kit
313386	Basic Web Interface/Advanced Web Interface
406800	15V825 Discrete I/O Board Kit

Equipment Approvals

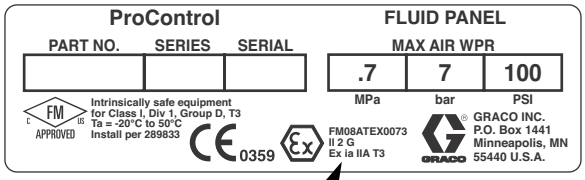
Equipment approvals appear on the following labels which are attached to the Fluid Station Control Box and EasyKey™. See FIG. 1 on page 4 for label locations.

EasyKey and Fluid Station Control Box Label

ATEX Certificate is listed here

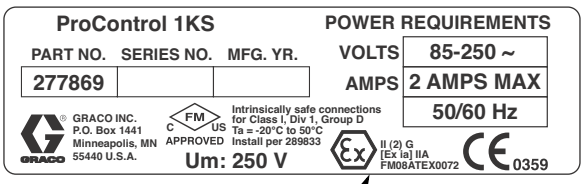

ProControl 1KS
Electronic Proportioner
FM08ATEX0074
II 2 G
Ex ia IIA T3
FM C US APPROVED
Intrinsically safe equipment for Class I, Div 1, Group D, T3
Ta = -20°C to 50°C
0359
MAX AIR WPR
.7 7 100
MPa bar PSI
MAX FLUID WPR
1.31 13.1 190
MPa bar PSI
MAX TEMP 50°C (122°F)
Intrinsically Safe (IS) System. Install per IS Control Drawing No. 289833. EasyKey Interface IS Associated Apparatus for use in non hazardous location, with IS Connection to Smart Fluid Plate IS
Apparatus for use in:
Class I, Division 1, Group D T3 C Hazardous Locations
Read Instruction Manual
Warning: Substitution of components may impair intrinsic safety.
PART NO. SERIES SERIAL
MFG. YR.
GRACO INC.
P.O. Box 1441
Minneapolis, MN
55440 U.S.A.

Fluid Station Control Box Label



ATEX Certificate is listed here

EasyKey Label



ATEX Certificate is listed here

System Configuration and Part Numbers

Models

The part number for your equipment is printed on the equipment identification labels. See FIG. 1 for location of the identification labels.							
			Meter			Flow Control	
Part No.	Series	Description	None	G3000	Coriolis	No	Yes
262380	A	ProControl 1KS	✔			✔	
262381	A	ProControl 1KS		✔		✔	
262382	A	ProControl 1KS		✔			✔
262383	A	ProControl 1KS			✔		✔

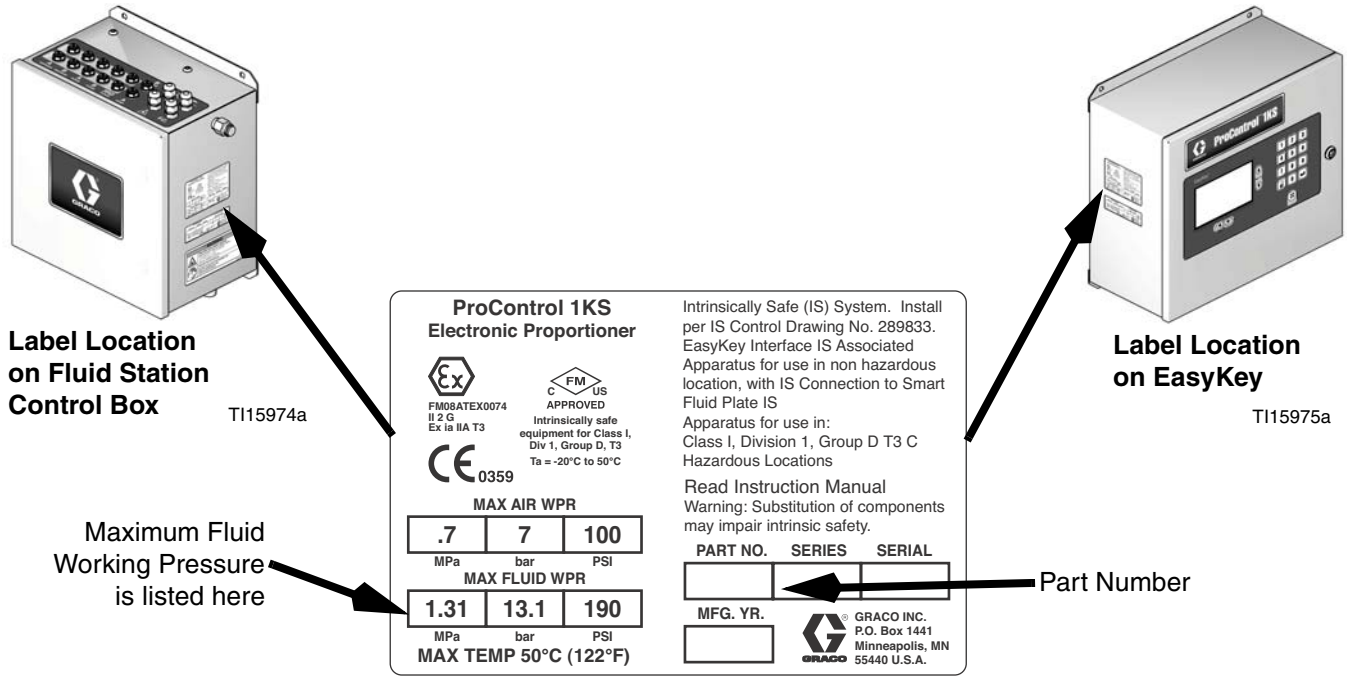


FIG. 1: Identification Label, ProControl 1KS Systems

Hazardous Location Approval

Models using a G3000, G3000HR, or intrinsically safe Coriolis meter are approved for installation in a Hazardous Location - Class I, Div I, Group D, T3 or Zone I Group IIA T3.

Maximum Working Pressure

Maximum working pressure rating is dependent on the fluid component options selected. ***The pressure rating is based on the rating of the lowest rated fluid component.*** Refer to the component pressure ratings below. *Example:* Model 262383 has a maximum working pressure of 190 psi (1.31 MPa, 13.1 bar).

Check the identification label on the EasyKey or fluid station for the system maximum working pressure. See FIG. 1.

ProMix Fluid Components Maximum Working Pressure

Base System (no meter, no color/catalyst change option, and no flow control [option)	4000 psi (27.58 MPa, 275.8 bar)
G3000 Meter Option	4000 psi (27.58 MPa, 275.8 bar)
Coriolis Meter Option	2300 psi (15.86 MPa, 158.6 bar)
Color Change Option	300 psi (2.07 MPa, 20.6 bar)
Flow Control Option	190 psi (1.31 MPa 13.1 bar)

Flow Meter Fluid Flow Rate Range

G3000	75-3800 cc/min. (0.02-1.0 gal./min.)
G3000HR	38-1900 cc/min. (0.01-0.50 gal./min.)
Coriolis Meter	20-3800 cc/min. (0.005-1.00 gal./min.)
S3000 Solvent Meter (accessory)	38-1900 cc/min. (0.01-0.50 gal./min.)

Standard Features

Feature
EasyKey with LCD
RS 485 Network Cable, 50 ft (15.25 m)
Fiber Optic and Power Cables, 50 ft (15.25 m)
Fluid Station Control Box
Discrete I/O Board
A Side Dump Valve, if color valve(s) selected
Flow Control with 15 ft (4.57 m) Cable (if selected)
Basic Web Interface

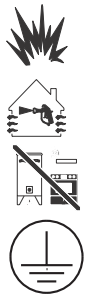
Accessories

Accessory
15V536 Solvent Flow Switch Kit
15V213 Power Cable, 100 ft (30.5 m)
15G710 Fiber Optic Cable, 100 ft (30.5 m)
15G614 Flow Control Extension Cable, 40 ft (12.2 m)
15W034 Strobe Light Alarm Indicator Kit
15V331 Gateway Ethernet Communication Kit
15V963 Gateway DeviceNet Communication Kit
15V964 Gateway Profibus Communication Kit
15V337 Advanced Web Interface

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

⚠ WARNING



FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. To help prevent fire and explosion:

- Use equipment only in well ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Ground all equipment in the work area. See **Grounding** instructions.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail.
- If there is static sparking or you feel a shock, **stop operation immediately.** Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.

ELECTRIC SHOCK HAZARD

This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.

- Turn off and disconnect power at main switch before disconnecting any cables and before servicing equipment.
- Connect only to grounded power source.
- All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.

INTRINSIC SAFETY

Intrinsically safe equipment that is installed improperly or connected to non-intrinsically safe equipment will create a hazardous condition and can cause fire, explosion, or electric shock. Follow local regulations and the following safety requirements.

- Only models with a G3000, G250, G3000HR, G250HR, or intrinsically safe Coriolis meter are approved for installation in a Hazardous Location - Class I, Div I, Group D, T3 or Zone I Group IIA T3.
- Do not install equipment approved only for a non-hazardous location in a hazardous area. See the ID label for the intrinsic safety rating of your model.
- Do not substitute or modify system components as this may impair intrinsic safety.

WARNING

SKIN INJECTION HAZARD

High-pressure fluid from gun, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. **Get immediate surgical treatment.**

- Do not spray without tip guard and trigger guard installed.
- Engage trigger lock when not spraying.
- Do not point gun at anyone or at any part of the body.
- Do not put your hand over the spray tip.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** when you stop spraying and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses and couplings daily. Replace worn or damaged parts immediately.

EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Data** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure. Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.

WARNING

TOXIC FLUID OR FUMES HAZARD

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.

- Read MSDSs to know the specific hazards of the fluids you are using.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.
- Always wear chemically impermeable gloves when spraying, dispensing, or cleaning equipment.

PERSONAL PROTECTIVE EQUIPMENT

You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

Important Two-Component Material Information

Isocyanate Conditions

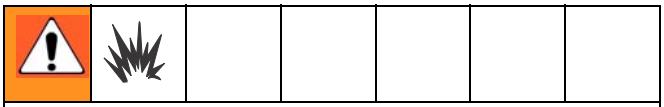
Spraying or dispensing materials containing isocyanates creates potentially harmful mists, vapors, and atomized particulates.

Read material manufacturer's warnings and material MSDS to know specific hazards and precautions related to isocyanates.

Prevent inhalation of isocyanate mists, vapors, and atomized particulates by providing sufficient ventilation in the work area. If sufficient ventilation is not available, a supplied-air respirator is required for everyone in the work area.

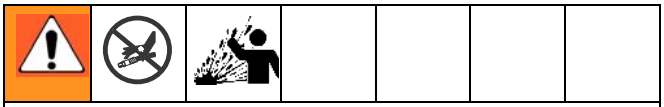
To prevent contact with isocyanates, appropriate personal protective equipment, including chemically impermeable gloves, boots, aprons, and goggles, is also required for everyone in the work area.

Material Self-ignition



Some materials may become self-igniting if applied too thickly. Read material manufacturer's warnings and material MSDS.

Keep Components A and B Separate



Cross-contamination can result in cured material in fluid lines which could cause serious injury or damage equipment. To prevent cross-contamination of the equipment's wetted parts, **never** interchange component A (isocyanate) and component B (resin) parts.

Moisture Sensitivity of Isocyanates

Isocyanates (ISO) are catalysts used in two component coatings. ISO will react with moisture (such as humidity) to form small, hard, abrasive crystals, which become suspended in the fluid. Eventually a film will form on the surface and the ISO will begin to gel, increasing in viscosity. If used, this partially cured ISO will reduce performance and the life of all wetted parts.

NOTE: The amount of film formation and rate of crystallization varies depending on the blend of ISO, the humidity, and the temperature.

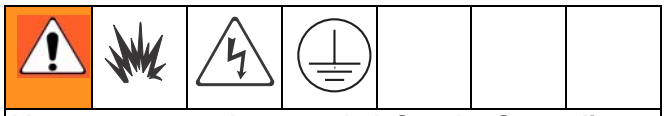
To prevent exposing ISO to moisture:

- Always use a sealed container with a desiccant dryer in the vent, or a nitrogen atmosphere. **Never** store ISO in an open container.
- Use moisture-proof hoses specifically designed for ISO, such as those supplied with your system.
- Never use reclaimed solvents, which may contain moisture. Always keep solvent containers closed when not in use.
- Never use solvent on one side if it has been contaminated from the other side.
- Always lubricate threaded parts with ISO pump oil or grease when reassembling.

Changing Materials

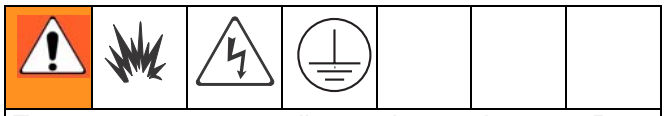
- When changing materials, flush the equipment multiple times to ensure it is thoroughly clean.
- Always clean the fluid inlet strainers after flushing.
- Check with your material manufacturer for chemical compatibility.
- Most materials use ISO on the A side, but some use ISO on the B side.

Grounding



Your system must be grounded. See the **Grounding** instructions in your ProControl 1KS Installation manual.

Check Resistance



To ensure proper grounding, resistance between ProControl components and true earth ground **must** be less than 1 ohm.

Have a qualified electrician check resistance between each ProControl component and true earth ground. If resistance is greater than 1 ohm, a different ground site may be required. Do not operate the system until the problem is corrected.

Pressure Relief Procedure

NOTE: The following procedures relieve all fluid and air pressure in the ProControl 1KS system. Use the procedure appropriate for your system configuration.

Relieve pressure when you stop spraying, before changing spray tips, and before cleaning, checking, or servicing equipment.

Single Color Systems

1. While in Mix mode (gun triggered), shut off the fluid supply pumps/pressure pots. Close all fluid shutoff valves at the pump outlets.

2. With the gun triggered, push the manual override on the A dose valve solenoid to relieve pressure. See FIG. 2.

   NOTE: If a Dose Time alarm (E-7, E-8) occurs, clear the alarm.

3. Do a complete system purge, following the instructions under **Purging Using Recipe 0**, in the ProControl 1KS Operation Manual.

4. Shut off the fluid supply to the solvent purge valve (SPV) and the air supply to the air purge valve (APV), FIG. 3.

5. With the gun triggered, push the manual override on the A purge valve solenoid to relieve air and solvent pressure. See FIG. 2. Verify that solvent pressure is reduced to 0.

   NOTE: If a Purge Volume alarm (E-11) occurs, clear the alarm.

Systems with Color Change and Dump Valves

NOTE: This procedure relieves pressure through the dump valves.

1. Complete all steps under **Single Color Systems**, page 10.

2. Shut off all color and catalyst supplies to the valve stacks.

3. Press and hold the dump valve A solenoid override, FIG. 2.

4. See FIG. 2. Open the color change module. Using the solenoid identification labels as a guide, press and hold the override button on each color solenoid until flow from dump valve A stops.

5. Press and hold the dump valve A solenoid override, FIG. 2.

6. Press and hold the A side (color) solvent solenoid override until clean solvent comes from the dump valve, then release.

7. Shutoff the solvent supply to the color/catalyst change stack solvent valves.

8. Press and hold the A solvent solenoid override and dump valve override until solvent flow from the dump valve stops.

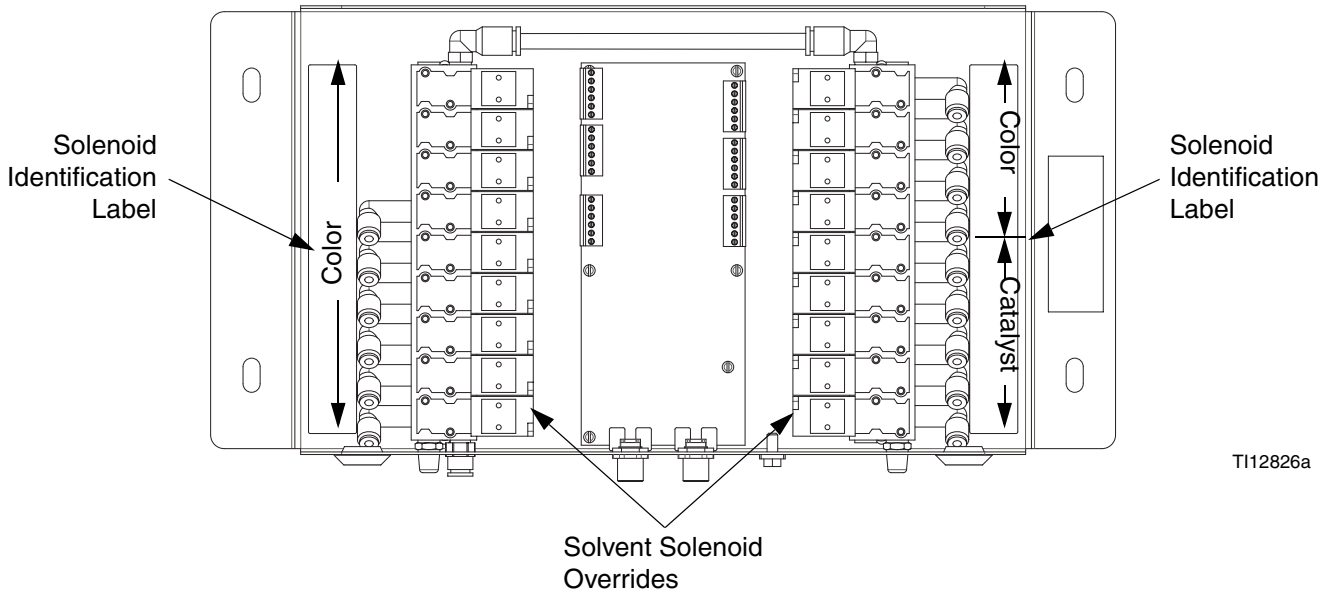
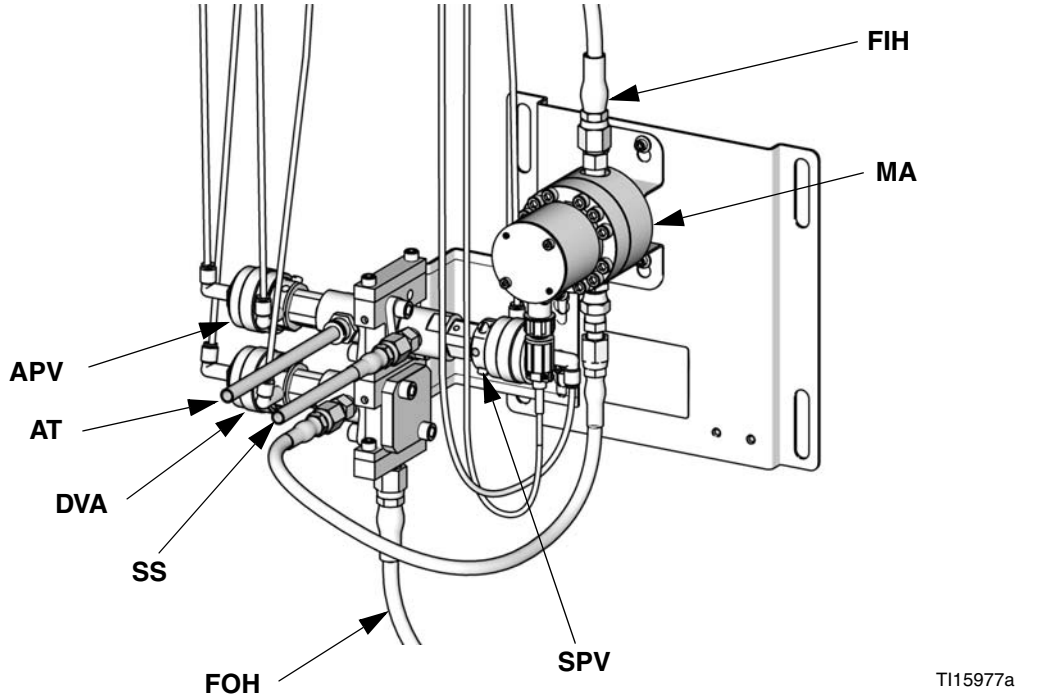


FIG. 2: Color Change Solenoids



Key:

MA	Component A Meter
DVA	Component A Dose Valve
SPV	Solvent Purge Valve
SS	Solvent Purge Valve Solvent Supply Tube
APV	Air Purge Valve
AT	Air Purge Valve Air Supply Tube
FIH	Fluid Inlet Hose
FOH	Fluid Outlet Hose

FIG. 3. Fluid Manifold

Troubleshooting

Follow **Pressure Relief Procedure**, page 10, before cleaning, checking, or servicing equipment.

NOTE: Do not use the fluid in the line that was dispensed off ratio as it may not cure properly.

Alarm Codes

Table 1 lists the system alarm codes. See the system operation manual for complete information on alarm troubleshooting.

Table 1: System Alarm Codes

Code	Description
E-1	Communication Error Alarm
E-2	Potlife Alarm
E-3	Ratio High Alarm
E-4	Ratio Low Alarm
E-5	Overdose A/B Dose Too Short Alarm
E-6	Overdose B/A Dose Too Short Alarm
E-7	Dose Time A Alarm
E-8	Dose Time B Alarm
E-9	Mix in Setup Alarm
E-10	Remote Stop Alarm
E-11	Purge Volume Alarm
E-12	CAN Network Communication Error Alarm
E-13	High Flow Alarm
E-14	Low Flow Alarm
E-15	System Idle Warning
E-16	Setup Change Warning
E-17	Power On Warning
E-18	Defaults Loaded Warning
E-19	I/O Alarm
E-20	Purge Initiate Alarm
E-21	Material Fill Alarm
E-22	Tank A Low Alarm
E-23	Tank B Low Alarm
E-24	Tank S Low Alarm
E-25	Auto Dump Complete Alarm
E-26	Color/Catalyst Purge Alarm
E-27	Color/Catalyst Fill Alarm

Solenoid Troubleshooting

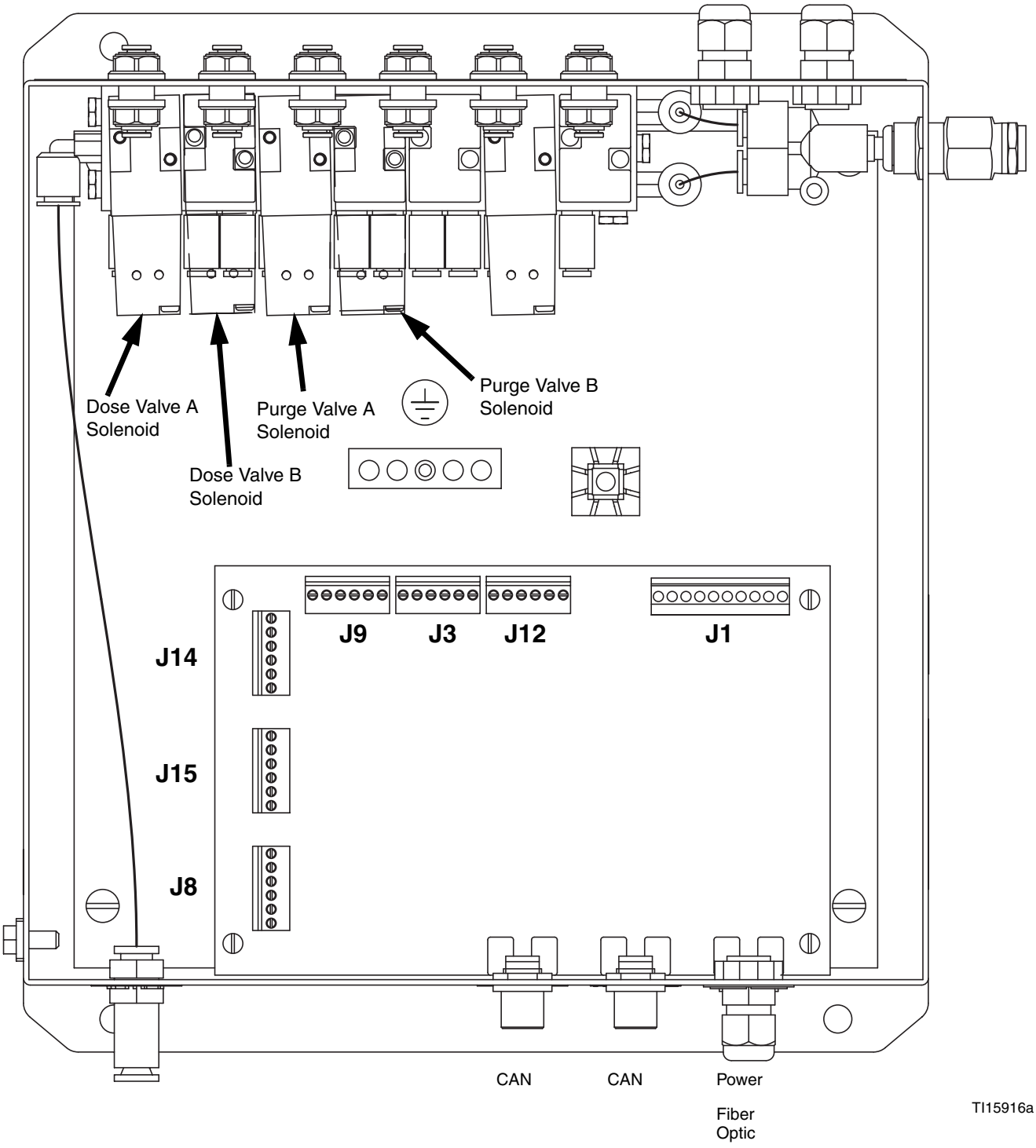


FIG. 4: Fluid Station Board and Solenoids

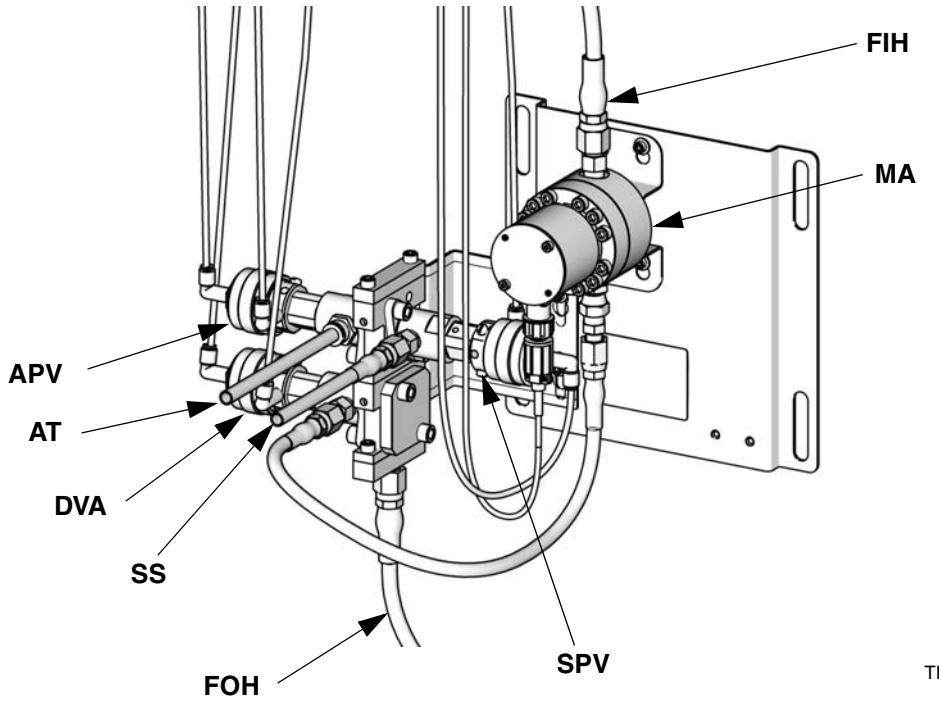
NOTE: Refer to the **Schematic Diagrams**, page 26.

If the dispense or purge valves are not turning on or off correctly, it could be caused by one of the following.

Cause	Solution
1. Air regulator pressure set too high or too low.	Check air pressure. 80-90 psi (550-630 kPa, 5.5-6.3 bar) is commonly used. Do not go below 70 psi (490 kPa, 4.9 bar) or above 120 psi (0.8 MPa, 8 bar).
2. Air or electrical lines damaged or connections loose.	Visually inspect air and electrical lines for kinks, damage, or loose connections. Service or replace as needed.
3. Solenoid failure	Manually operate the valves by removing the Fluid Station cover and pressing and releasing solenoid valve override buttons. FIG. 4. Use the control board diagnostics to check the signals. If signals do not occur correctly, go to Cause 4. Valves should snap open and shut quickly. If the valves actuate slowly, it could be caused by: • Air pressure to the valve actuators is too low. See Cause 1. • Solenoid is clogged. Make sure air supply has 10 micron filter installed. • Something is restricting the solenoid or tubing. Check for air output from air line for corresponding solenoid when valve is actuated. Clear restriction. • A dose valve is turned in too far. See ProControl 1KS Operation manual for settings. • Fluid pressure is high and air pressure is low.
4. Solenoid, cable, or fluid station control board failure.	Check voltage level to solenoid by pulling solenoid connector and checking voltage between pins. If voltage is 9-15 VDC, the solenoid is damaged. Replace solenoid or correct electrical line problem. If there is no voltage, replace the board.

Wall Mount Fluid Manifold Troubleshooting

See FIG. 5.



Key:

MA	Component A Meter
DVA	Component A Dose Valve
SPV	Solvent Purge Valve
SS	Solvent Purge Valve Solvent Supply Tube
APV	Air Purge Valve
AT	Air Purge Valve Air Supply Tube
FIH	Fluid Inlet Hose
FOH	Fluid Outlet Hose

FIG. 5. Wall Mount Fluid Manifold

EasyKey Barrier Board Diagnostics

See FIG. 6 and Table 2 to troubleshoot the EasyKey barrier board. Also see the **EasyKey Electrical Schematic** on page 27 and the **System Electrical Schematic** on pages 28 and 29.

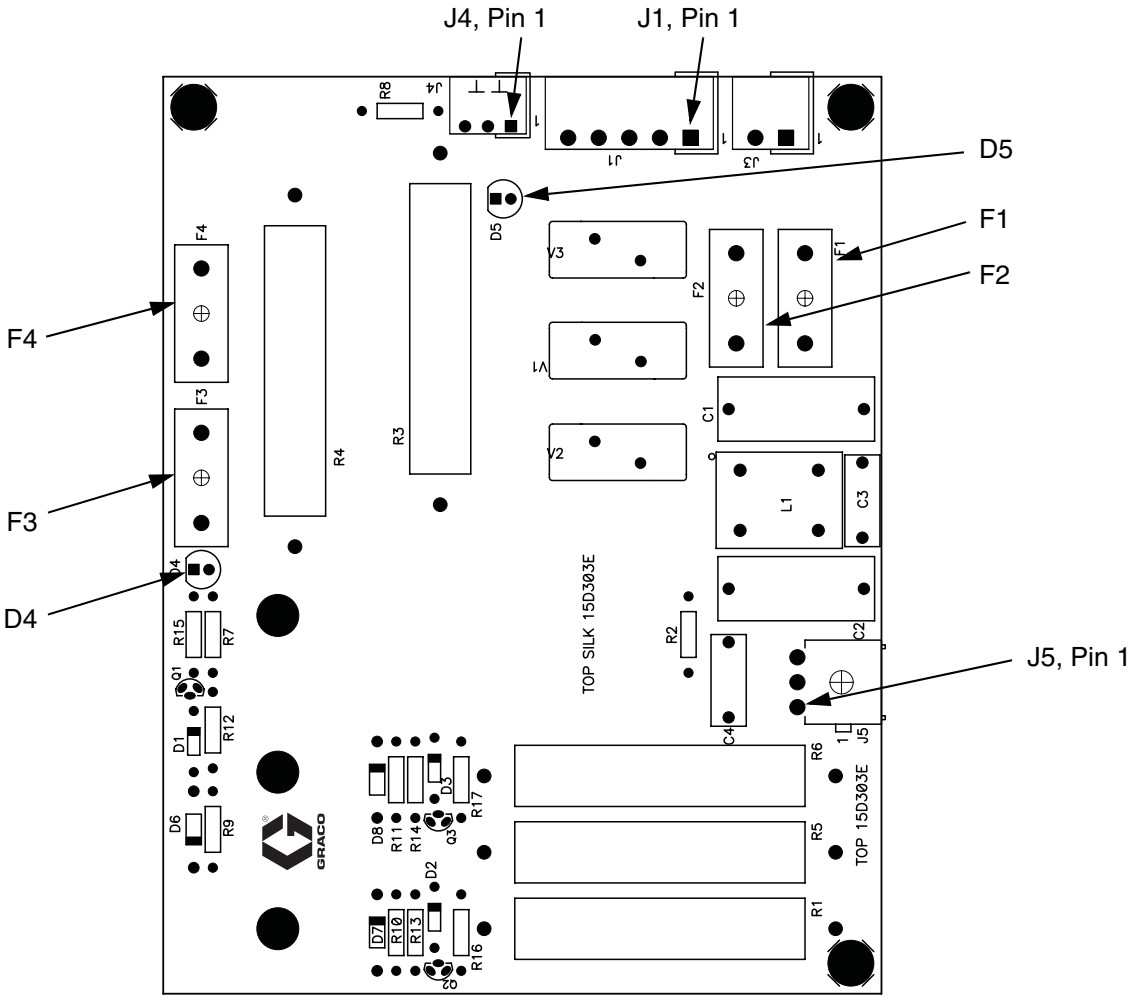


FIG. 6: 255786 EasyKey Barrier Board

Table 2: EasyKey Barrier Board Diagnostics

Connector	Description	Diagnosis
J1	AC Power Input	n/a
J4	24 Vdc Power Input to EasyKey Display Board	D5 turns on.
J5	12 Vdc Power Output to Fluid Station Board	D4 turns on if barrier board is functioning. If D4 does not turn on, fuses F3 or F4 (Graco Part No. 15D979) are blown or there is no input power at J4. If there is no input power (D5 does not light), fuses F1 and F2 (Graco Part No. 114788) may be blown.

EasyKey Display Board Diagnostics

See FIG. 7 and Table 3 to troubleshoot the EasyKey display board. Also see the **EasyKey Electrical Schematic** on page 27 and the **System Electrical Schematic** on pages 28 and 29.

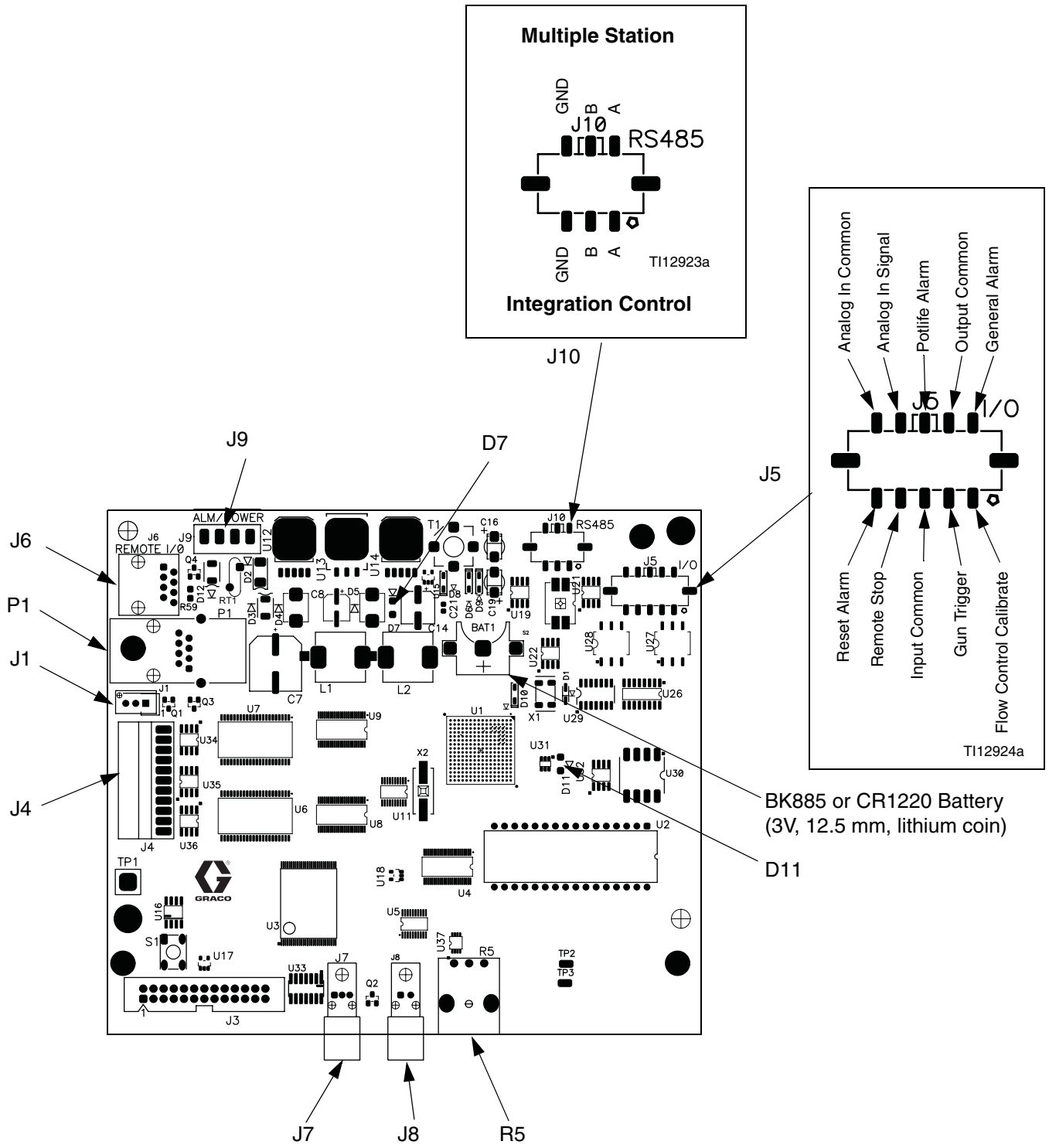


FIG. 7: 255767 EasyKey Display Board

Table 3: EasyKey Display Board Diagnostics

Connector/ Indicator	Description
J1	Graphic Display Backlight
J4	Ribbon Cable to Membrane
J5	Inputs and Outputs
J6	Remote I/O
J7	Fiber Optic Cable Input (black)
J8	Fiber Optic Cable Output (blue)

Connector/ Indicator	Description
J9	24 Vdc Power Input/Alarm Output
J10	RS485 Communication Terminals
D7 (green)	LED turns on when power is supplied to board
D11 (yellow)	LED blinks (heartbeat) when board is operating
P1	Ethernet Port
R5	Display Contrast/Dimmer Switch (turn by hand)

Discrete I/O Board Diagnostics

See FIG. 8 and FIG. 9 to troubleshoot the Discrete I/O board. Also see the **System Electrical Schematic** on pages 28 and 29.

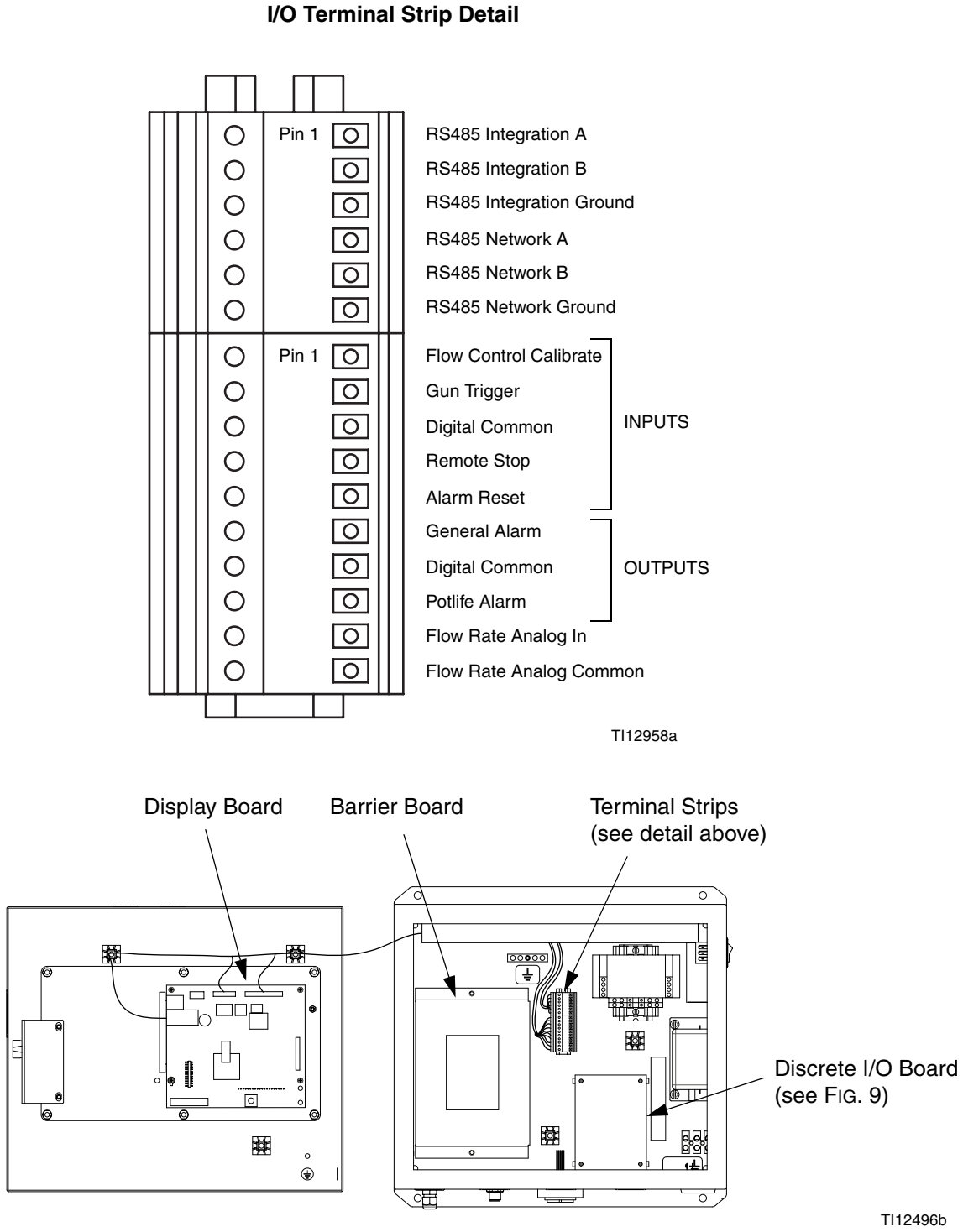


FIG. 8: EasyKey Control Boards and Terminal Strips

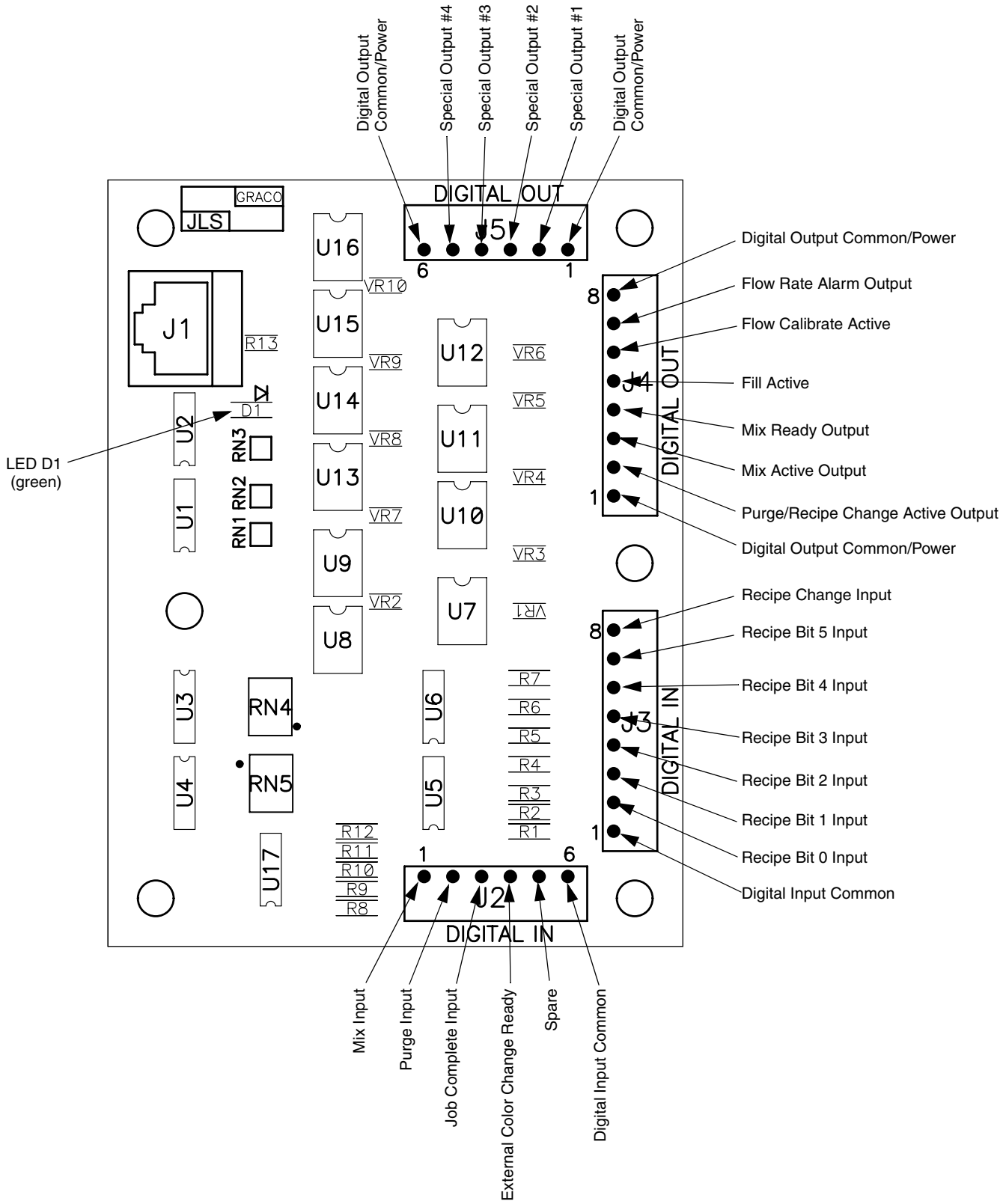


FIG. 9: 255766 Discrete I/O Board

Fluid Station Control Board Diagnostics

See FIG. 10 and Table 4 to troubleshoot the fluid station control board. Also see the **System Electrical Schematic** on pages 28 and 29.

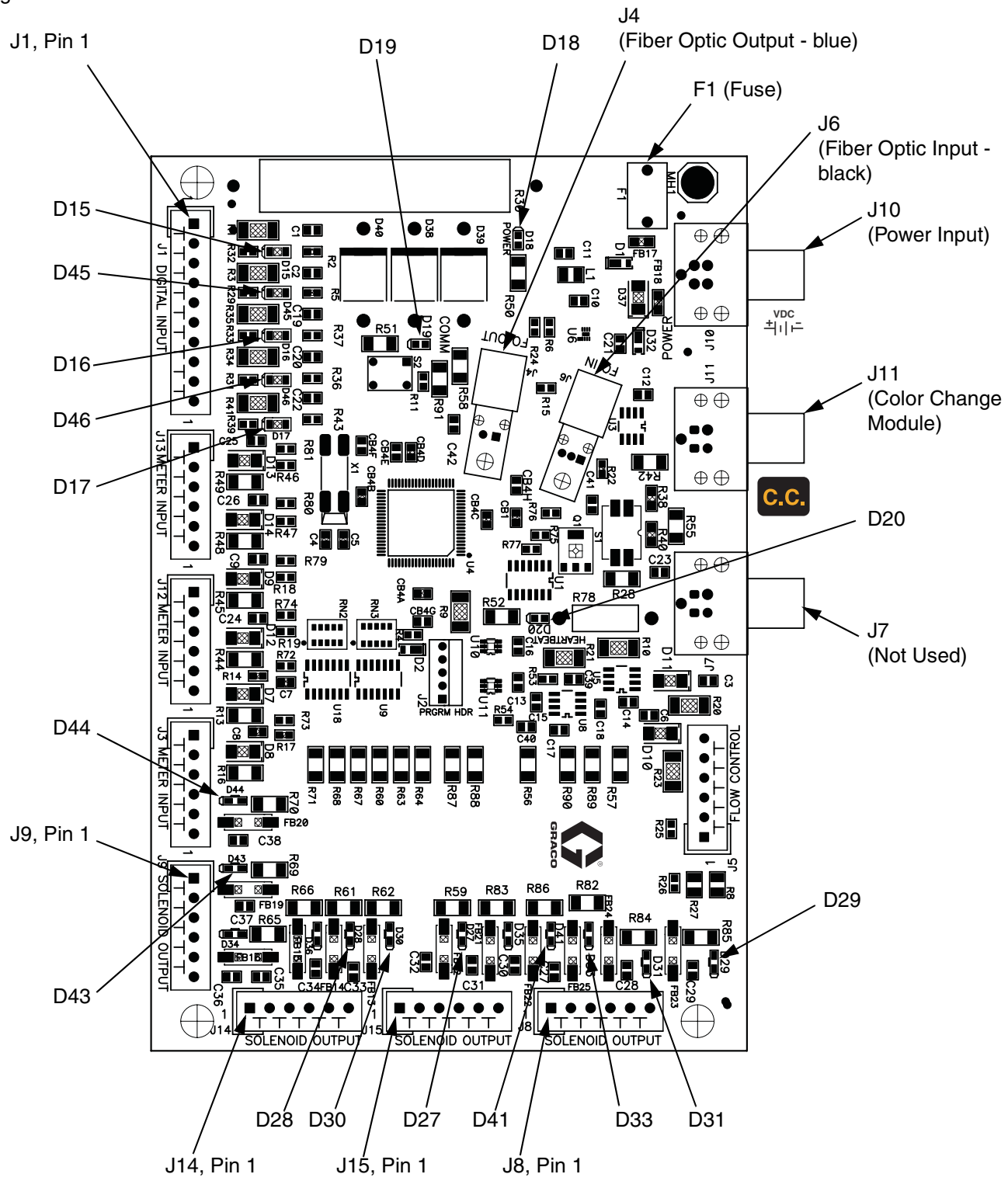


FIG. 10: 255765 Fluid Station Control Board

Table 4: Fluid Station Control Board Diagnostics

LED	Connector and Pin Nos.	Signal Description	Diagnosis
D15	J1, 1 & 2	Air Flow Switch 1	Turns on when gun 1 is triggered.
D16	J1, 5 & 6	Solvent Flow Switch	Turns on when solvent is flowing.
D17	J1, 9 & 10	Gun Flush Box 2 Pressure Switch	Turns on when a gun is in Gun Flush Box 2.
D18	J10	Power	Turns on when power is supplied to the board.
D19	n/a	Communication (yellow)	Turns on when board is communicating with EasyKey.
D20	n/a	Board OK	Blinks (heartbeat) during normal operation.
D27	J15, 1 & 2	Purge Valve C (Water Purge)	D27 through D44 turn on when ProMix sends a signal to actuate the related solenoid valve.
D28	J14, 3 & 4	Purge Valve A (Air Purge)	
D29	J8, 5 & 6	Dump Valve B	
D30	J14, 5 & 6	Purge Valve B (Solvent Purge)	
D31	J8, 1 & 2	Gun Flush Box 1 Trigger	
D33	J8, 3 & 4	Gun Flush Box 2 Trigger	
D41	J15, 5 & 6	Dump Valve A	
D43	J9, 3 & 4	Dose Valve B	
D44	J9, 1 & 2	Dose Valve A	
D45	J1, 3 & 4	Air Flow Switch 2	Turns on when gun 2 is triggered.
D46	J1, 7 & 8	Gun Flush Box 1 Pressure Switch	Turns on when a gun is in Gun Flush Box 1.
F1	n/a	Replaceable Fuse	Check fuse condition if there is no power to the fluid station.

Color Change Board Diagnostics

See FIG. 11 and Table 5 to troubleshoot the color change board. Also see the **System Electrical Schematic** on pages 28 and 29.

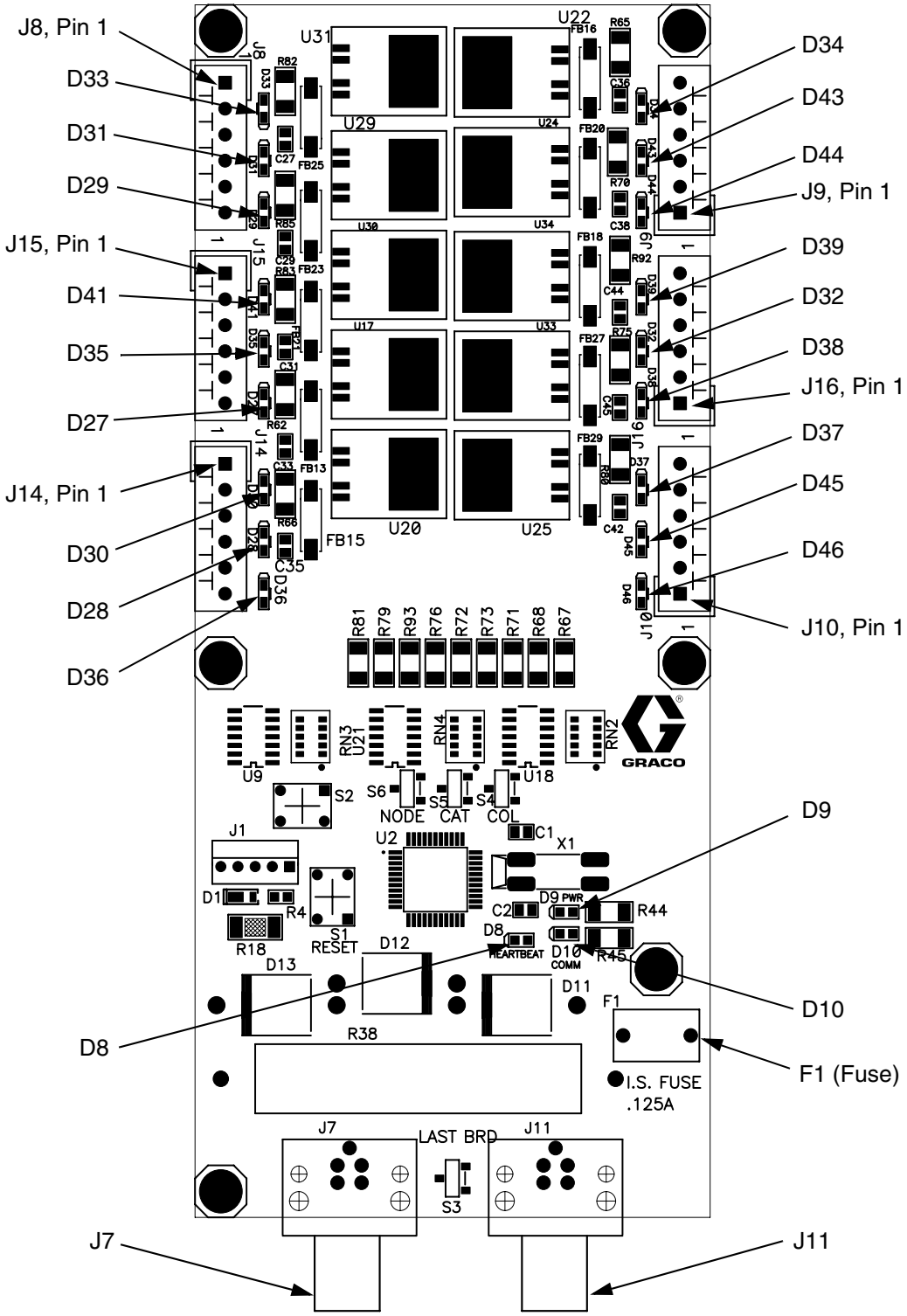


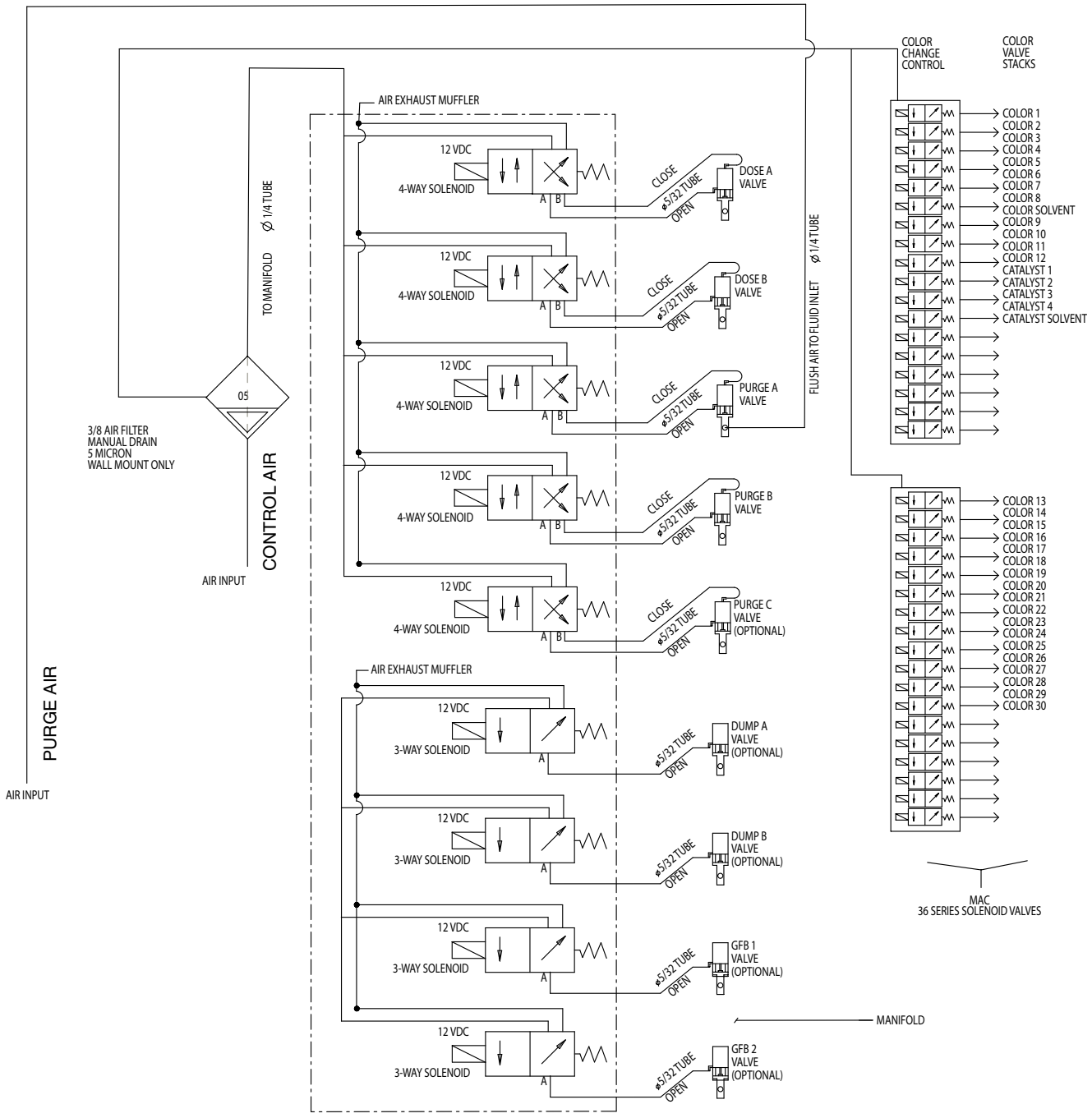
FIG. 11: 256172 Color Change Board

Table 5: Color Change Board Diagnostics

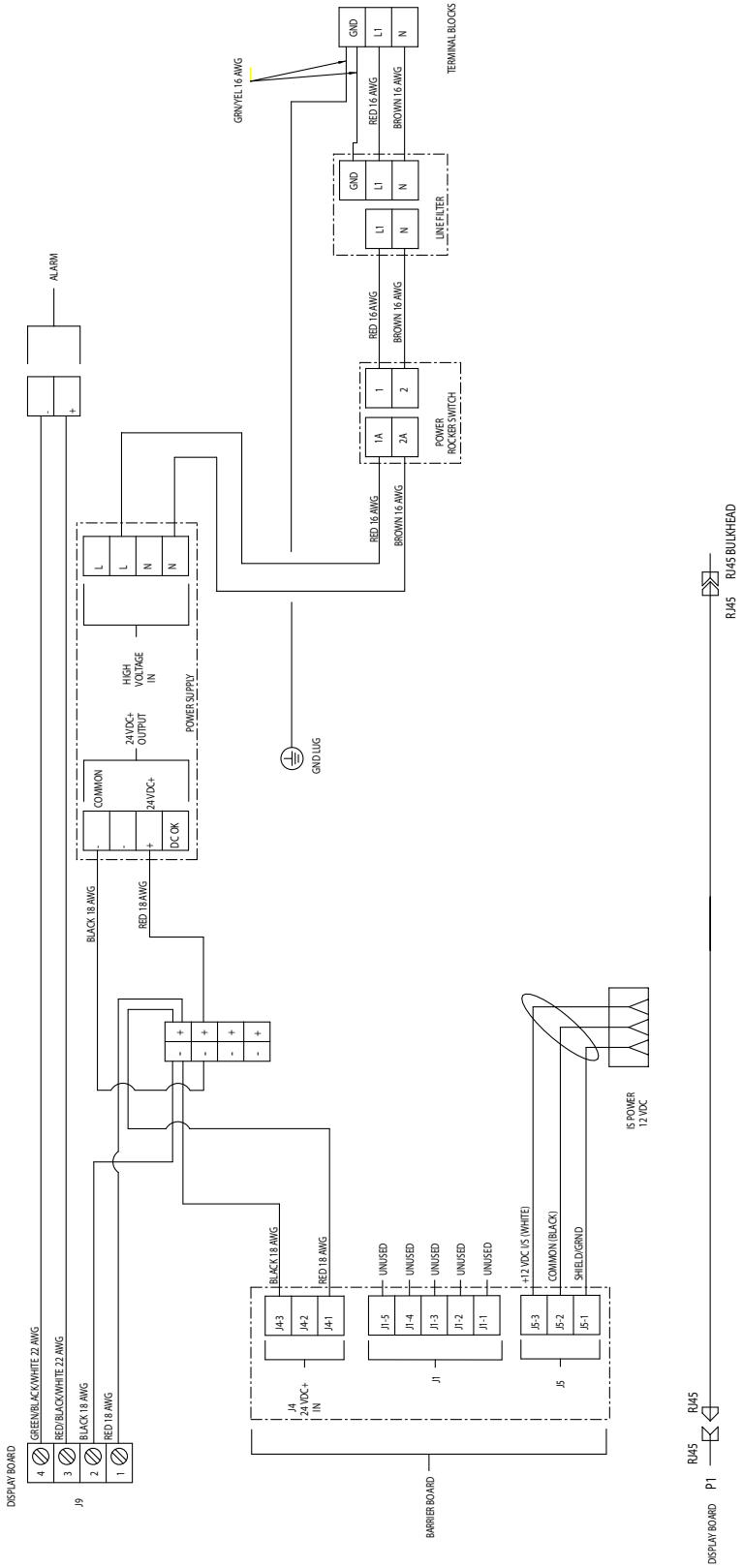
LED	Connector and Pin Nos.	Board 1 Signal Description	Board 2 Signal Description	Diagnosis
D8	n/a	Board OK	Board OK	Blinks (heartbeat) during normal operation.
D9	n/a	Communication (yellow)	Communication (yellow)	Turns on when board is communicating with ProMix 2KS.
D10	J7	Power	Power	Turns on when power is supplied to the board.
D27	J15, 5 & 6	Color 3	Color 16	D27 through D46 turn on when ProMix 2KS sends a signal to actuate the related solenoid valve.
D28	J14, 3 & 4	Color 1	Color 14	
D29	J8, 5 & 6	Color 6	Color 19	
D30	J14, 1 & 2	Color 2	Color 15	
D31	J8, 3 & 4	Color 7	Color 20	
D32	J16, 3 & 4	Catalyst 4	Color 26	
D33	J8, 1 & 2	Color 8	Color 21	
D34	J9, 5 & 6	Color 9	Color 22	
D35	J15, 3 & 4	Color 4	Color 17	
D36	J14, 5 & 6	Solvent (Color)	Color 13	
D37	J10, 5 & 6	Catalyst 2	Color 28	
D38	J16, 1 & 2	Catalyst 3	Color 27	
D39	J16, 5 & 6	Color 12	Color 25	
D41	J15, 1 & 2	Color 5	Color 18	
D43	J9, 3 & 4	Color 10	Color 23	
D44	J9, 1 & 2	Color 11	Color 24	
D45	J10, 3 & 4	Catalyst 1	Color 29	
D46	J10, 1 & 2	Solvent (Catalyst)	Color 30	
F1	Replaceable Fuse	n/a	n/a	Check fuse condition if there is no power to the board or if communication is interrupted between the fluid station and the color change module.

Schematic Diagrams

System Pneumatic Schematic



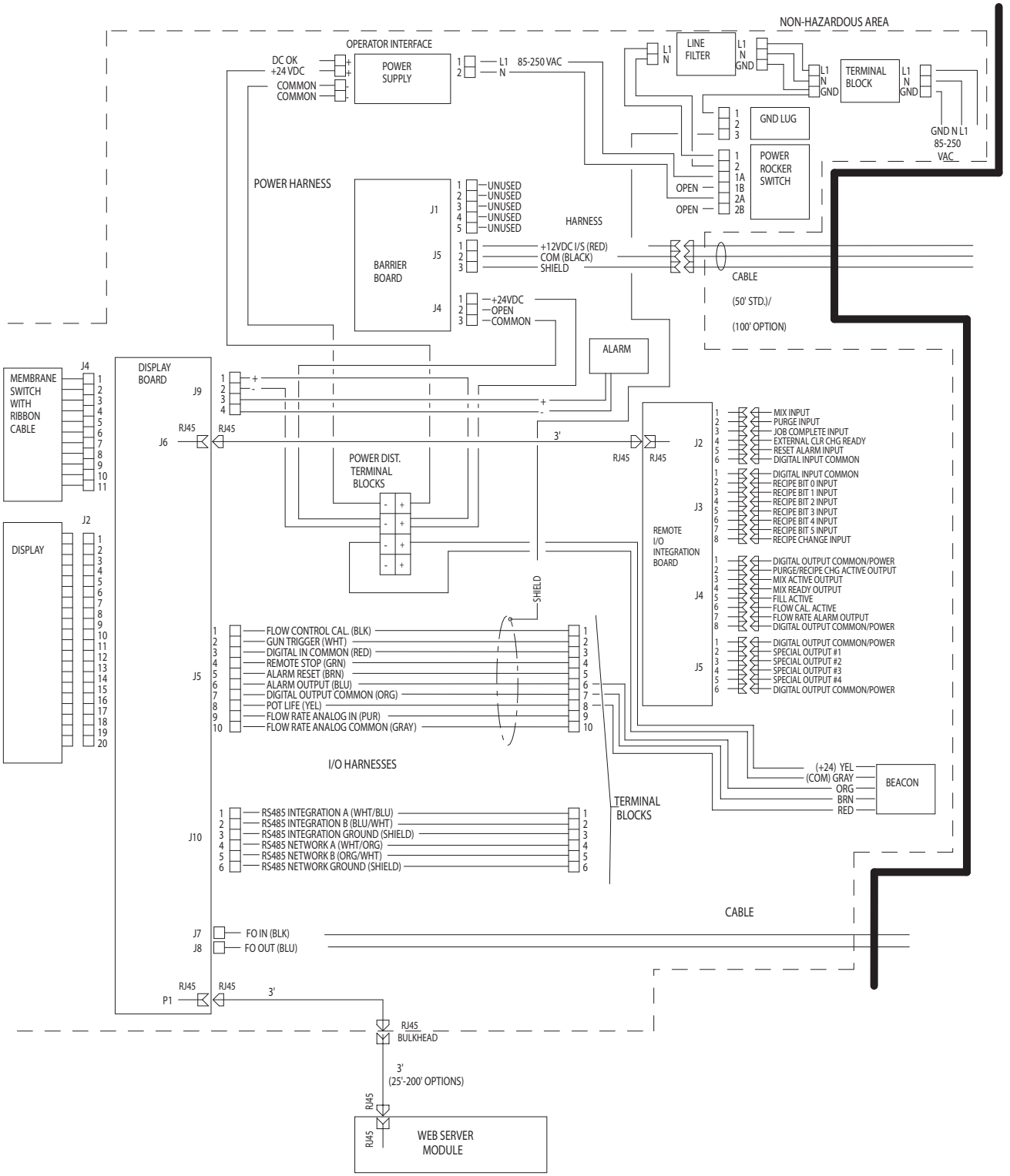
EasyKey Electrical Schematic



System Electrical Schematic

NOTE: The electrical schematic illustrates all possible wiring expansions in a ProMix 2KS system. Some components shown are not included with all systems.

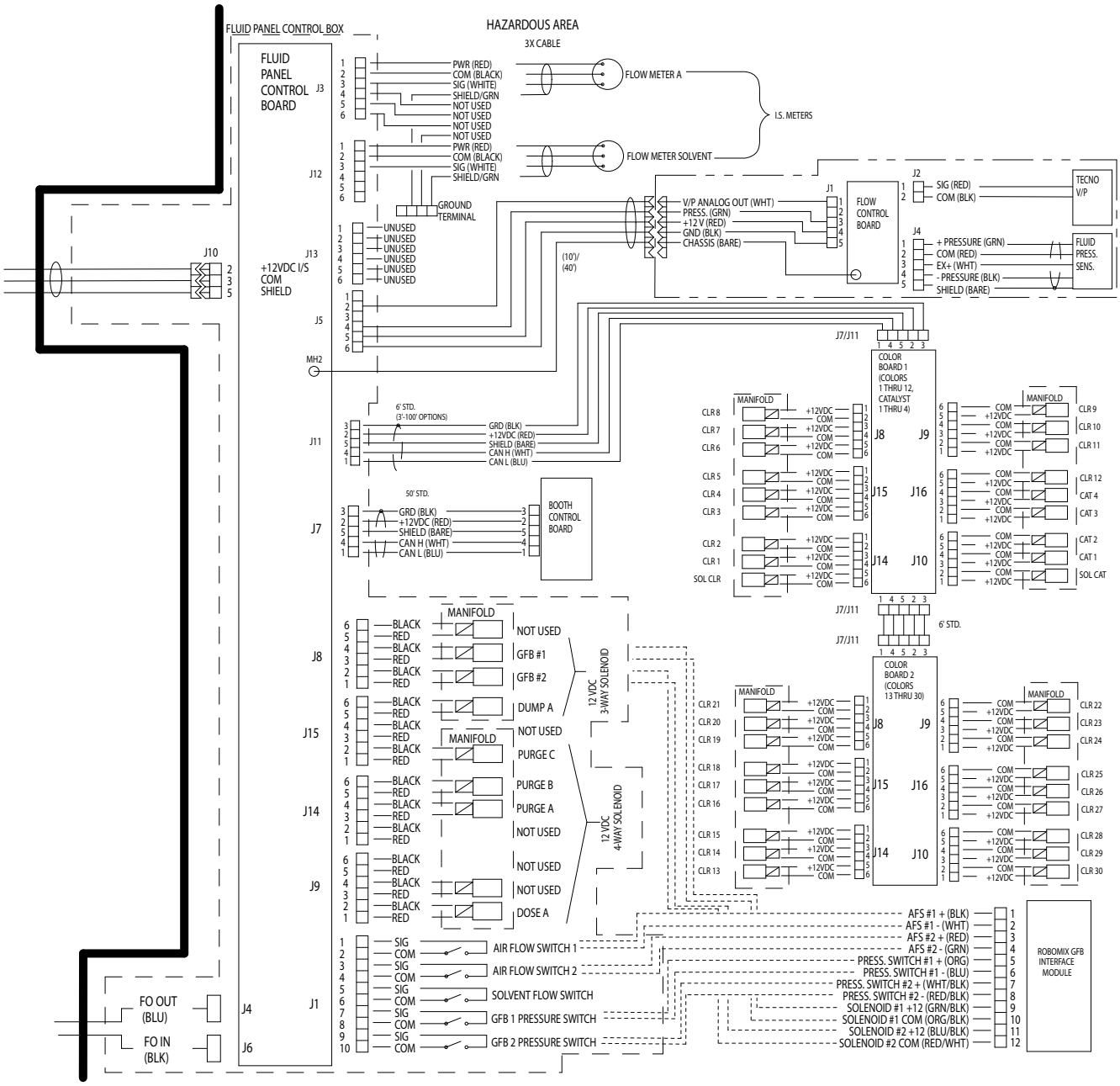
Non-Hazardous Area



System Electrical Schematic

NOTE: The electrical schematic illustrates all possible wiring expansions in a ProMix 2KS system. Some components shown are not included with all systems.

Hazardous Area



Service

Before Servicing

- To avoid electric shock, turn off EasyKey power before servicing.
- Servicing EasyKey display exposes you to high voltage. Shut off power at main circuit breaker before opening enclosure.
- All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.
- Do not substitute or modify system components as this may impair intrinsic safety.
- Read **Warnings**, page 6.

NOTICE

To avoid damaging circuit board when servicing, wear Part No. 112190 grounding strap on wrist and ground appropriately.

1. Flush system and follow **Pressure Relief Procedure**, page 10, if service time may exceed pot life time and before servicing fluid components.
2. Close main air shutoff valve on air supply line and on ProControl 1KS.
3. Shut off ProControl 1KS power (0 position). FIG. 12.
4. If servicing EasyKey, also shut off power at main circuit breaker.

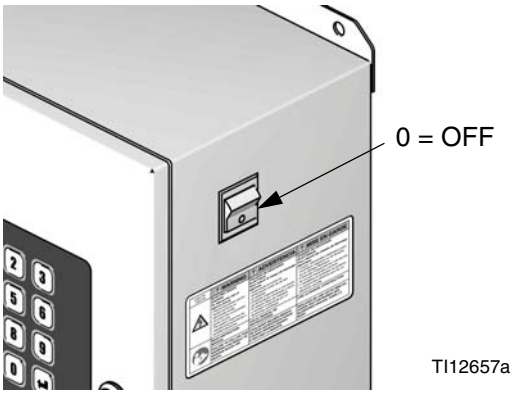


FIG. 12: Power Off

After Servicing

After servicing the system, be sure to follow the **Start Up** checklist and procedure in the ProControl 1KS Operation manual.

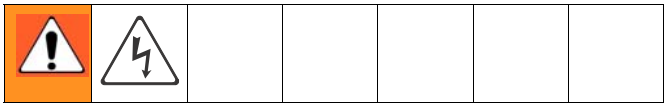
Servicing EasyKey

Updating Software

To update software, upload new software from your PC using the basic web interface. See manual 313386.

NOTE: If using the Graco Gateway in your system, disconnect its cable from the EasyKey before updating the ProControl 1KS software.

Replacing Display Board or Graphic Display



NOTICE

To avoid damaging circuit board when servicing, wear Part No. 112190 grounding strap on wrist and ground appropriately.

1. Follow **Before Servicing**, page 30.
2. Unlock and open EasyKey door with its key.
3. Note position of all external connections (J4, J5, J6, J7, J8, J9, J10) to display board, then unplug the connectors. See FIG. 7 on page 18.
4. Remove 4 screws (210e) and the display board assembly (210b, 210c). FIG. 13.

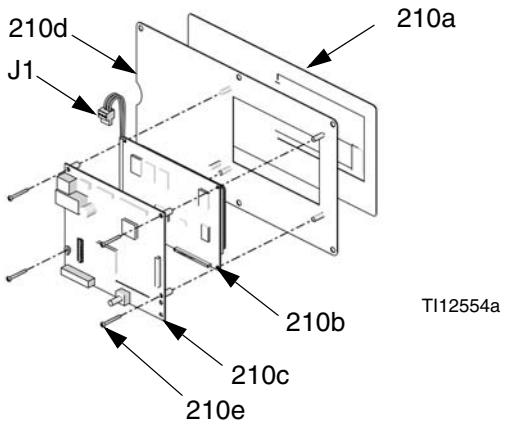
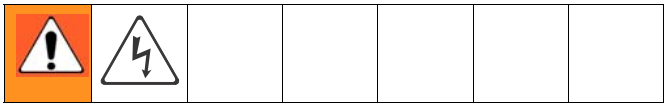


FIG. 13: Display Interface

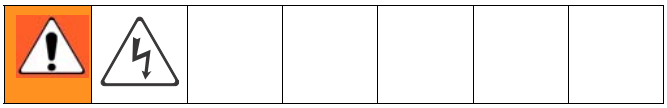
5. Disconnect graphic display power cable (J1) from the display board (210c).
6. Separate graphic display (210b) from display board (210c) [connector J2 on back of board].
7. To assemble the new parts, align connector J2 on the display board (210c) with the socket on the graphic display (210b). Press them together. See FIG. 13.
8. Reconnect the graphic display power cable (J1) to the display board (210c).
9. Mount display board assembly with screws (210e).
10. Plug all connectors into display board (210c). FIG. 13. Confirm that the cables do not pinch when opening or closing the door.
11. Locate the battery on the board (see FIG. 7 on page 18). Pull the strip to remove the protective isolator and activate the battery.
12. Close and lock EasyKey door with key.
13. Turn EasyKey power on to test display board.

Replacing Power Supply



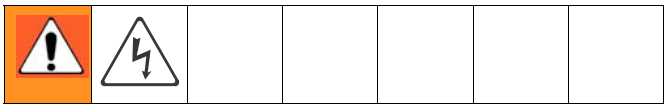
1. Follow **Before Servicing**, page 30.
2. Unlock and open EasyKey door with its key.
3. Note position of power supply input and output wires. See **EasyKey Electrical Schematic**, page 27. Disconnect wires from power supply (214f). See FIG. 14.
4. Remove power supply from din rail.
5. Install new power supply (214f). Reconnect input and output wires in positions noted in step 3.
6. Close and lock EasyKey door with key.
7. Turn on power at main circuit breaker.
8. Turn EasyKey power on to test operation.

Replacing Line Filter



1. Follow **Before Servicing**, page 30.
2. Unlock and open EasyKey door with its key.
3. Note position of line filter input and output wires. See **EasyKey Electrical Schematic**, page 27. Disconnect wires and remove line filter (214l) from bracket (214m). See FIG. 14.
4. Install new line filter (214l). Reconnect wires in positions noted in step 3.
5. Close and lock EasyKey door with key.
6. Turn on power at main circuit breaker.
7. Turn EasyKey power on to test operation.

Replacing Power Switch



1. Follow **Before Servicing**, page 30.
2. Unlock and open EasyKey door with its key.
3. Note position of power switch wires. See **EasyKey Electrical Schematic**, page 27. Disconnect wires and remove switch (202, FIG. 14).
4. Install new power switch (202). Reconnect wires in positions noted in step 3.
5. Close and lock EasyKey door with key.
6. Turn on power at main circuit breaker.
7. Turn EasyKey power on to test operation.

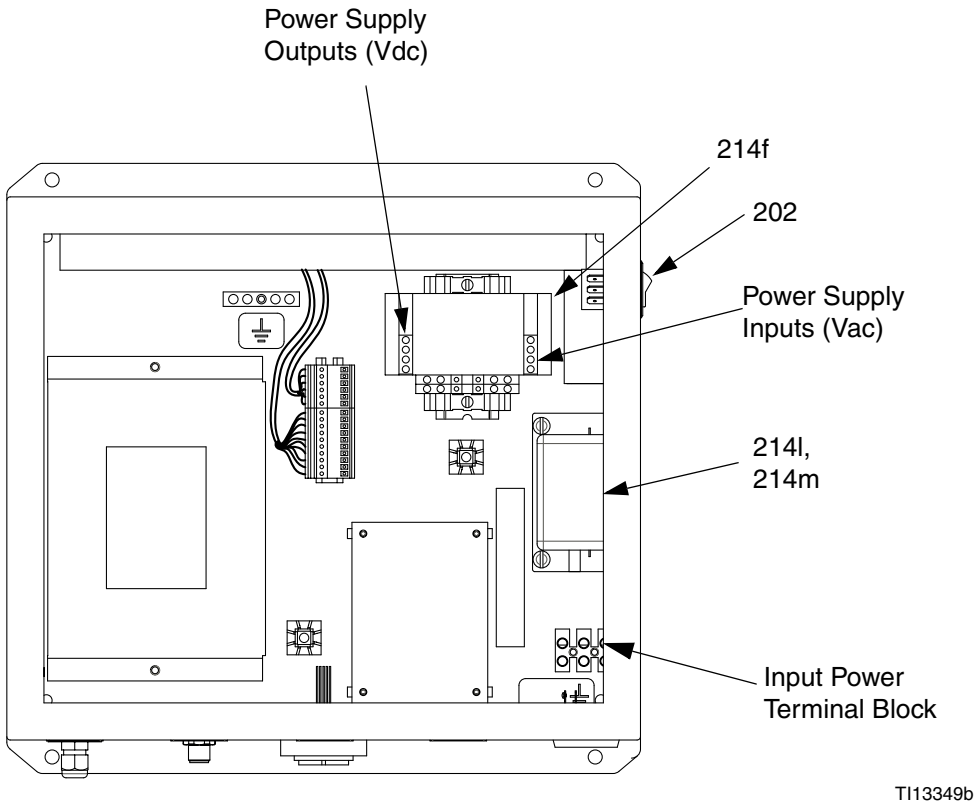


FIG. 14: Power Supply

Replacing Barrier Board

NOTICE

To avoid damaging circuit board when servicing, wear Part No. 112190 grounding strap on wrist and ground appropriately.

1. Follow **Before Servicing**, page 30.
2. Unlock and open EasyKey door with its key.
3. Disconnect the cables and connectors from J1, J4, and J5. FIG. 16.
4. Using the security tool provided (Part No. 122239), remove 2 screws (214k) and the cover (214b). See FIG. 15.
5. Noting their location, remove 5 screws (214g, 214h) from the barrier board (214a). Do not remove the screw noted in FIG. 16. Remove board.
6. Apply thermal compound to the heatsink (Z) on the back of the new barrier board (214a). FIG. 16.
7. Install the new barrier board with the 5 screws (214g, 214h).
8. Install the cover (214b) with 2 screws (214k), using the security tool.
9. Connect cables to J1, J4, and J5.
10. Close and lock EasyKey door with key.
11. Turn on power at main circuit breaker.
12. Turn EasyKey power on to test operation.

Replacing Barrier Board Fuses

Fuse	Part No.	Description
F1, F2	114788	Power In Fuses; 2 amp, time lag
F3, F4	15D979	Power Out Fuses; 0.4 amp, quick acting

1. Follow **Replacing Barrier Board**, steps 1-4.
2. Remove the fuse (F1, F2, F3, or F4) from its fuse holder. FIG. 16.
3. Snap new fuse into holder.
4. Follow **Replacing Barrier Board**, steps 8-12.

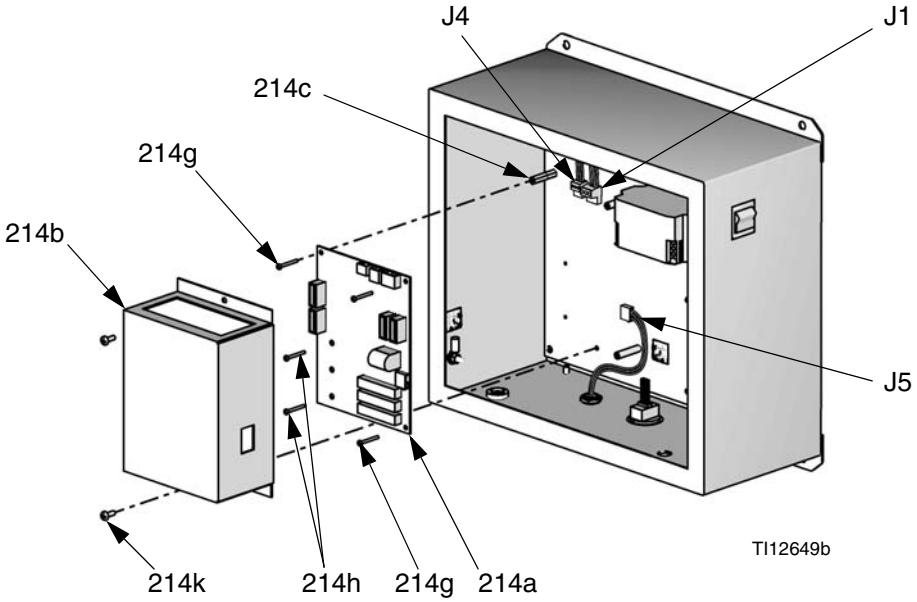
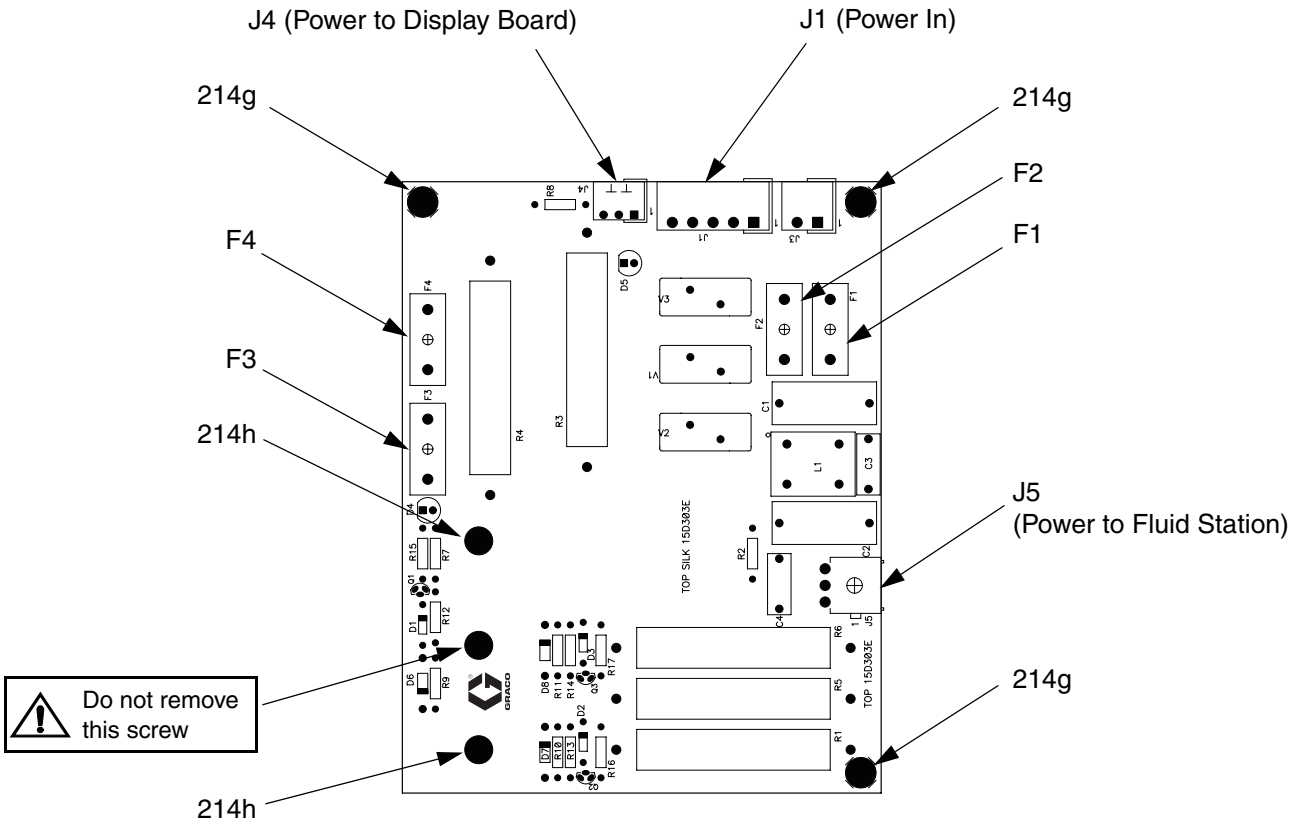


FIG. 15: Replacing Barrier Board



Front of Barrier Board, showing Fuses and Connectors

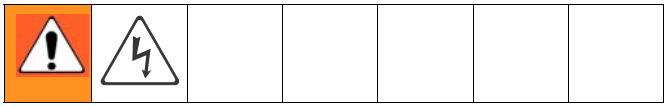
1 Apply thermal compound to surface of heatsink (Z).

Back of Barrier Board, showing Heatsink (Z)

FIG. 16: Barrier Board Connectors and Fuses

Control Box

Replacing Control Board



NOTICE

To avoid damaging circuit board when servicing, wear Part No. 112190 grounding strap on wrist and ground appropriately.

1. Follow **Before Servicing**, page 30.
2. Disconnect fiber optic wires (J4, J6) and all cables (J1, J3, J5, J7, J8, J9, J10, J12, J14, J15) from control board (302). FIG. 17.
3. Remove 4 screws (303). Remove connector jam nuts on the outside of the enclosure (301). Remove control board (302). FIG. 18.
4. Install new control board (302) with 4 screws (303).
5. Connect cables to control board (302). FIG. 17. Insert fiber optic cable connectors (J4, J6) into board connectors (E), matching blue with blue, black with black, and hand-tighten connectors. Do not pinch or kink the fiber optic cables; the cables require a 2 in. (51 mm) bend radius.
6. Turn EasyKey power on to test operation.

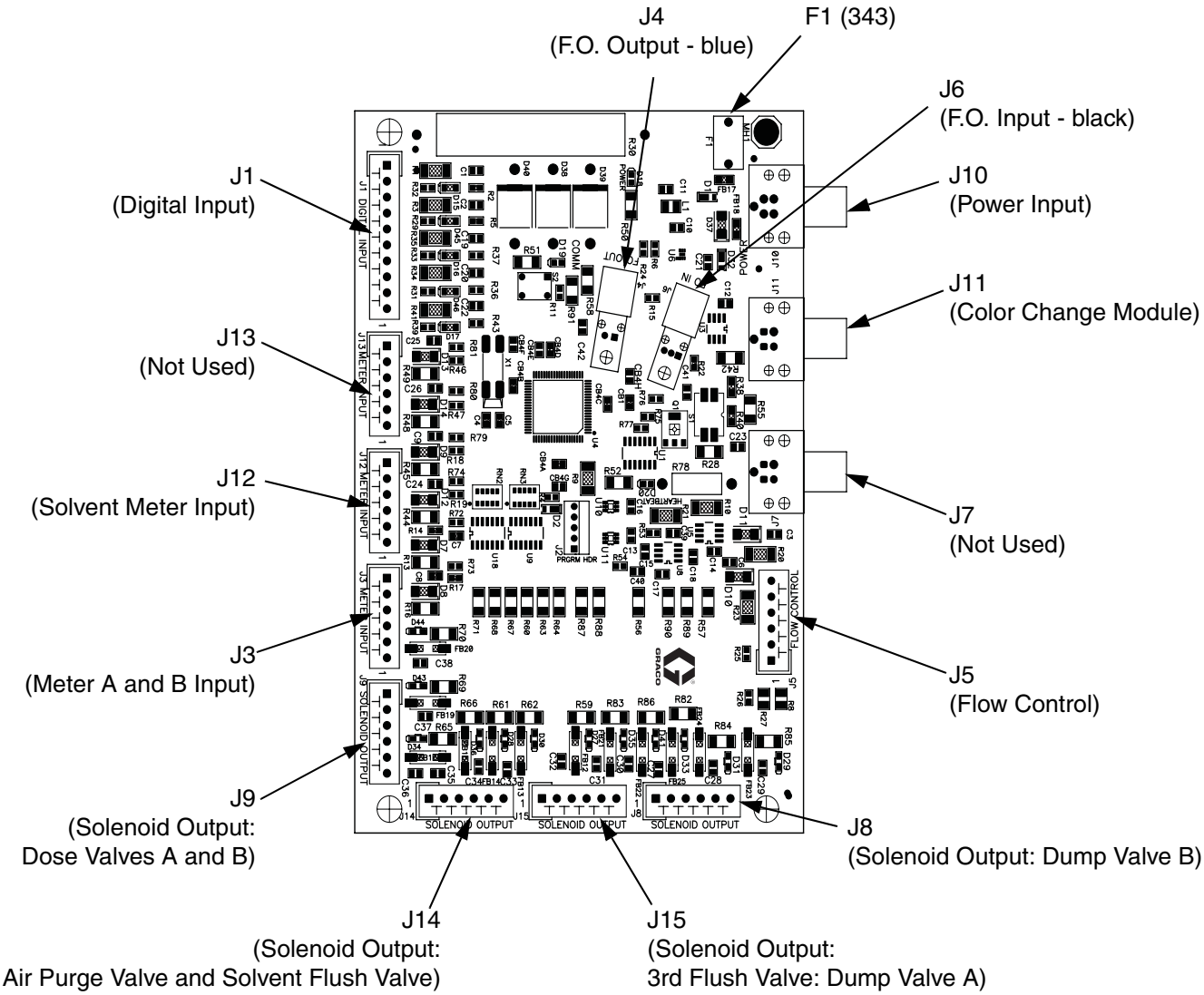


FIG. 17: 255765 Fluid Station Control Board

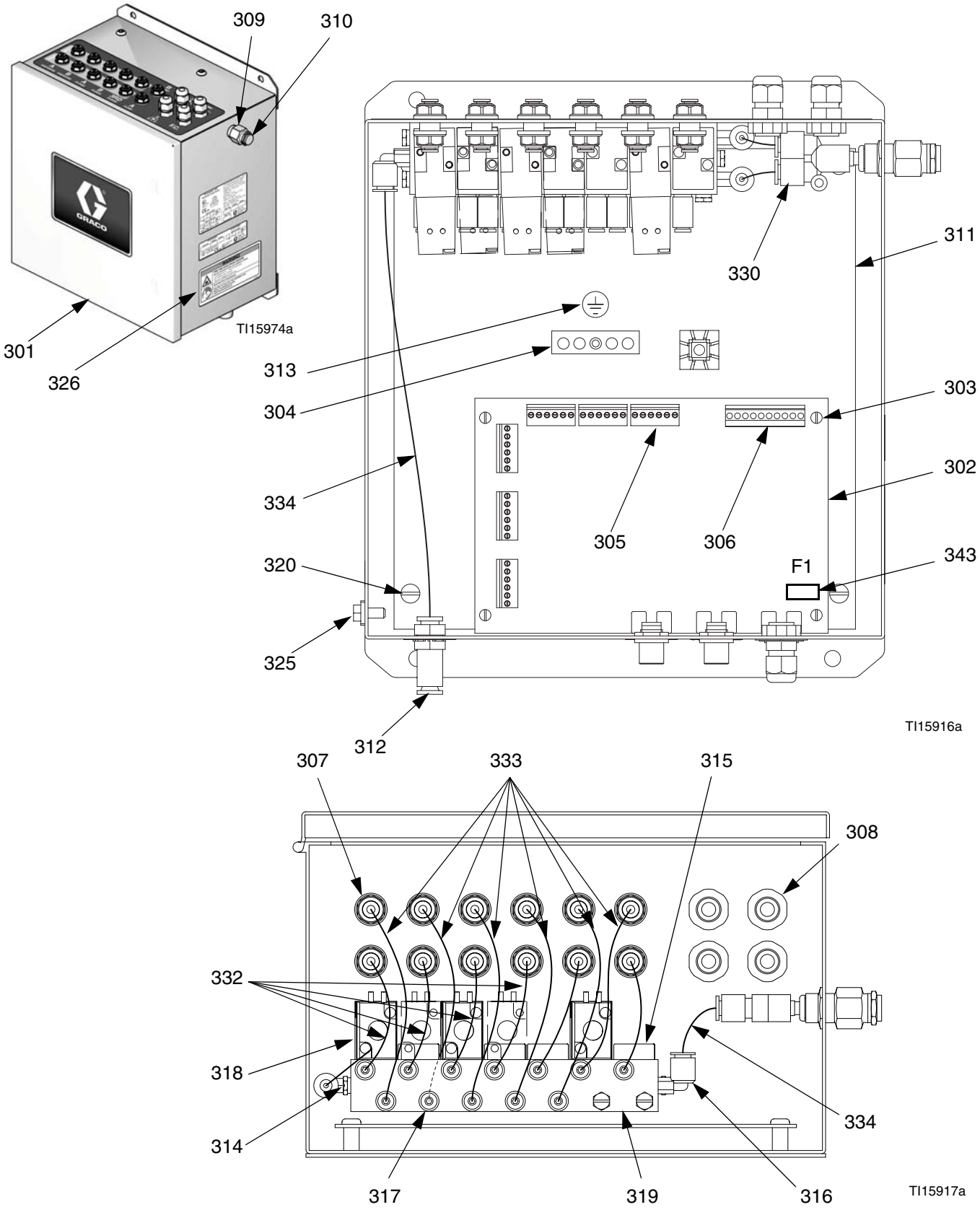


FIG. 18: Fluid Station Control Box

Replacing Solenoids

The Fluid Station Control Box has a minimum of 4 solenoids. If you have options installed, you have additional (optional) solenoids for each. See Table 6 and **Schematic Diagrams**, page 26.

To replace a single solenoid:

1. Follow **Before Servicing**, page 30, and shut off power at main circuit breaker.
2. Disconnect 2 solenoid wires from control board (302). See FIG. 17 and **System Electrical Schematic**, page 29.
3. Unscrew 2 screws and remove solenoid (318). FIG. 19.
4. Install new solenoid (318).
5. Connect 2 wires (N) to control board (302). Solenoid wires are polarized (red +, black –). Refer to **System Electrical Schematic**, page 29.

Table 6: Control Box Solenoids

Solenoid	Actuates
Standard	
1	Dose Valve A
2	Dose Valve B
3	Air Purge Valve
4	Solvent Purge Valve
Optional	
5	Third Flush Valve
6	Dump Valve A
7	Dump Valve B

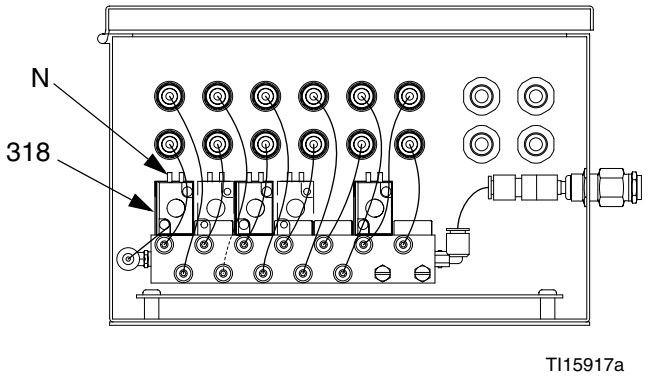


FIG. 19: Replacing Solenoids

Replacing Control Board Fuse

Replacing the fuse with a non-Graco fuse voids the IS system safety approval.

Fuse	Part No.	Description
F1	123690	Fuse; 125 mA, intrinsically safe

1. Follow **Before Servicing**, page 30.
2. Locate fuse F1 on the control board. See FIG. 18. Remove the screw and metal strap.
3. Pull the fuse away from the board.
4. Install the new fuse (343).

Servicing Flow Meter

Coriolis Meter

1. Follow **Before Servicing**, page 30.
2. To remove and service the Coriolis meter, see manual 313599.

G3000 or G3000HR Meter

Removal

1. Follow **Before Servicing**, page 30.
2. Unscrew cable connector (CC) from meter (M). FIG. 20.
3. Unscrew four 1/4-20 screws (MS) holding the meter mounting plate (MP). FIG. 20.
4. Unscrew fluid line from meter inlet (P).
5. Unscrew meter (M) from dose valve connector (H). FIG. 20.
6. Service meter as instructed in the meter manual 308778.

Installation

1. Screw meter (M) securely onto the dose valve connector (H), using a wrench.

NOTE: To avoid leakage, secure the meter (M) to the dose valve connector (H) before connecting it to the fluid station.

2. Secure meter (M) and plate (MP) to bracket with screws (MS).
3. Connect meter cable (CC). See FIG. 20.
4. Connect fluid line (P).
5. Calibrate meter as instructed in ProControl 1KS Operation manual.

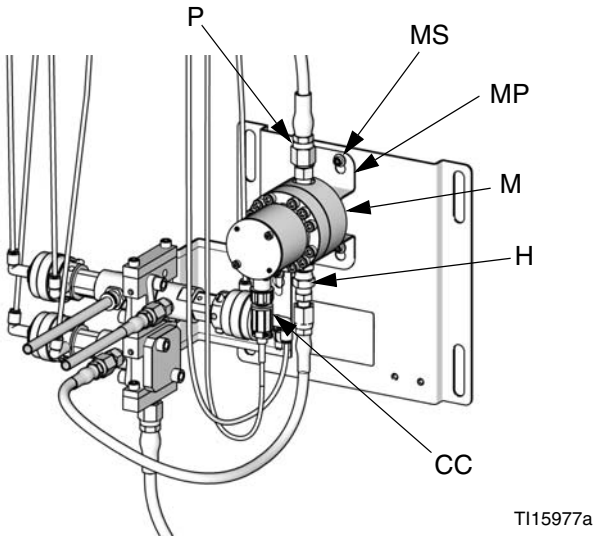
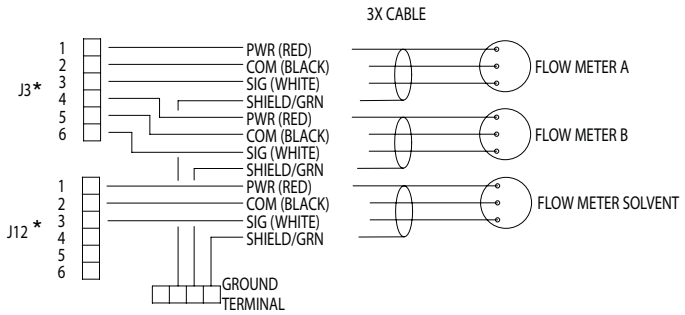


FIG. 20: G3000/G3000HR Flow Meters

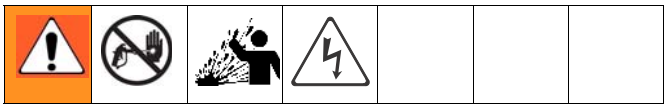
Cable	Length
241799	5 ft (1.52 m)
241800	16 in. (406 mm)
241801	13 in. (330 mm)



*Connectors on Fluid Station Control Board

FIG. 21: Meter Cable Schematic

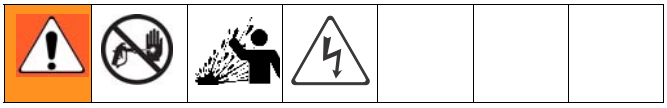
Servicing Color Change Module, Color/Catalyst Valves, and Dump Valves



1. Follow **Before Servicing**, page 30.
2. See manual 312787 for the color change module.
3. See manual 312783 for the color/catalyst valve stacks.
4. See manual 312786 for the dump valve kits.
5. See manual 312782 to service an individual valve.

Servicing Flow Control

Preparation



1. Follow **Before Servicing**, page 30.
2. Disconnect all air and fluid lines from the flow control regulator.
3. Disconnect the flow control cable from connector (624). FIG. 23.
4. Remove the four screws (605) holding the air plate (607) to the housing (611). Carefully lift the plate off the housing and disconnect the three cables from J1, J2, and J4 on the circuit board (618). FIG. 22.

Servicing the Regulator and Pressure Sensor

Regulator Service Kit 15G843 is available. Kit parts are marked with an asterisk, for example (602*). For best results, use all parts in the kit.

Sensor Service Kit 15G867 is available to service the pressure sensor only. Kit parts are marked with a symbol, for example (602‡). For best results, use all parts in the kit.

1. Follow **Preparation**, above.
2. Remove the four screws (605) and the nut (601) from the underside of the air plate (607). Separate the air plate and fluid plate.
3. Unscrew the pressure sensor (620) from the fluid plate (606).

   NOTE: If you are only replacing the pressure sensor kit 15G867, skip to step 6.

4. Remove the plug (615) and o-ring (604) from the top of the fluid plate (606). Remove the parts of the diaphragm assembly (613, 610, 609, 612, 617, 616). Remove and discard the dowels (623).
5. Reassemble the diaphragm assembly using the new parts from the kit. Be sure the AIR SIDE of the diaphragm (617) faces down. Torque the nut (601) to 8-10 in-lb (0.9-1.1 N•m).
6. Install a new o-ring (602) on the pressure sensor (620) and screw the sensor into the fluid plate (606).
7. Reinstall the fluid plate on the air plate. Be careful not to pinch the pressure sensor cable. Torque the screws (605) to 30-40 in-lb (3.4-4.5 N•m).
8. Reconnect the three cables to J1, J2, and J4 on the circuit board (618). FIG. 22.
9. Reattach the air plate (607) to the housing (611). Torque the screws (605) to 30-40 in-lb (3.4-4.5 N•m).
10. Reattach the flow control cable and all air and fluid lines.

Servicing the Flow Control Board

1. Follow **Before Servicing**, page 30.
2. Remove the four screws (605) holding the bracket (614) to the housing (611). FIG. 23.
3. Carefully separate the bracket from the housing and disconnect the three cables from J1, J2, and J4 on the circuit board (618). FIG. 22.
4. Remove the screws (621). Replace the old board with the new board.
5. Reconnect the three cables to J1, J2, and J4 on the circuit board (618). FIG. 22.
6. Reattach the bracket (614) to the housing (611). Torque the screws (605) to 30-40 in-lb (3.4-4.5 N•m).

Servicing the V/P Valve

1. Follow **Before Servicing**, page 30.
2. Remove the four screws (605) holding the bracket (614) to the housing (611). FIG. 23.
3. Carefully separate the bracket from the housing and disconnect the V/P valve cable from J2 on the circuit board (618). FIG. 22.
4. Remove the two screws (619a) and o-rings (619b). Install the new valve (619) with new screws and o-rings.
5. Reconnect the V/P valve cable to J2 on the circuit board (618). FIG. 22.
6. Reattach the bracket (614) to the housing (611). Torque the screws (605) to 30-40 in-lb (3.4-4.5 N•m).

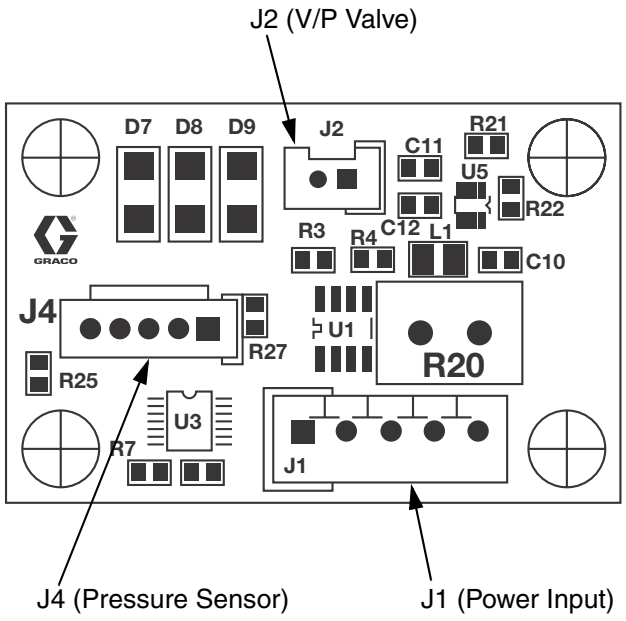
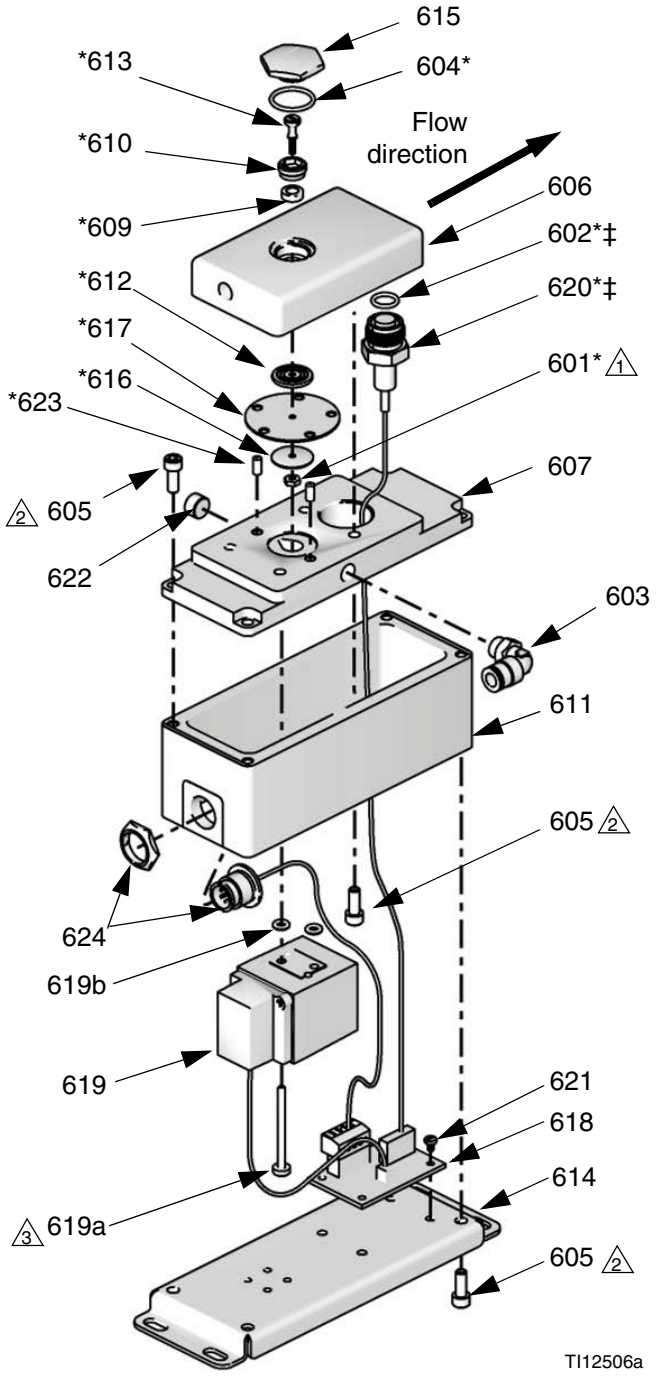


FIG. 22: 249179 Flow Control Board



1 Torque to 8-10 in-lb (0.9-1.1 N•m)

2 Torque to 30-40 in-lb (3.4-4.5 N•m)

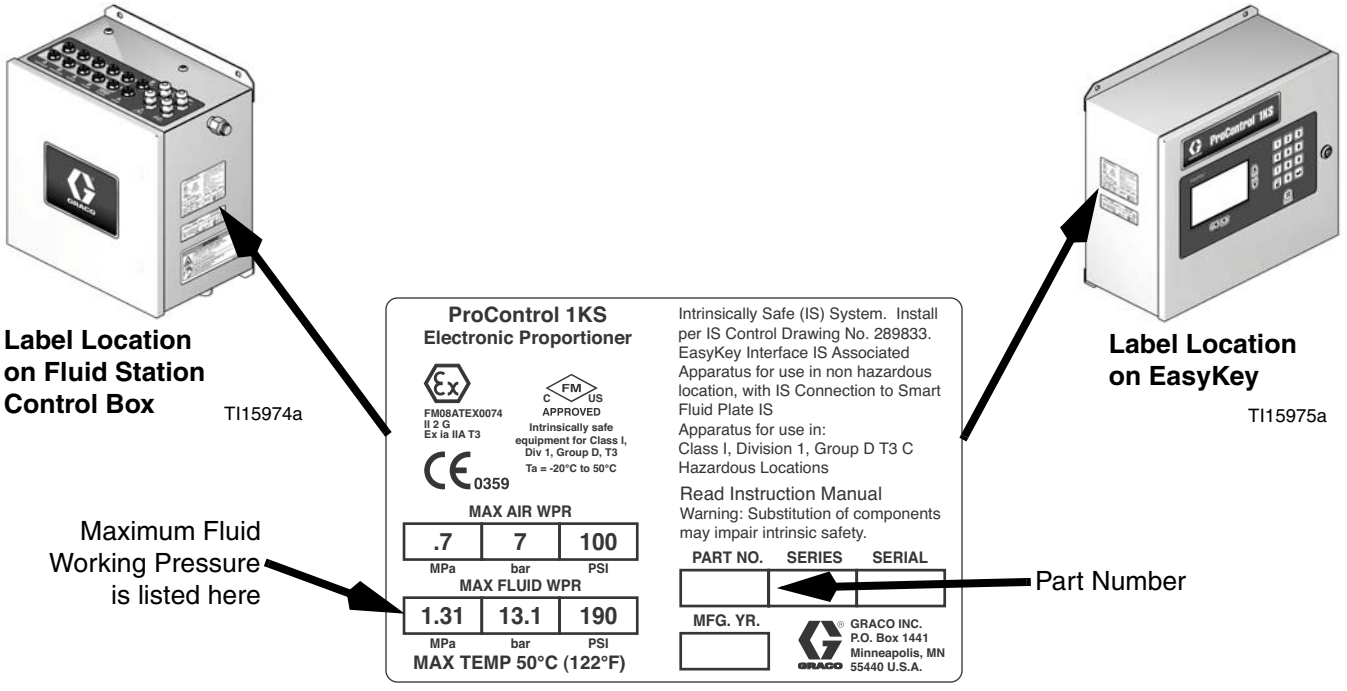
3 Torque to 5-7 in-lb (0.6 -0.8 N•m)

FIG. 23: Flow Control

Parts

ProControl 1KS System

The part number for your equipment is printed on the equipment identification labels. See FIG. 1 for location of the identification labels.							
			Meter			Flow Control	
Part No.	Series	Description	None	G3000	Coriolis	No	Yes
262380	A	ProControl 1KS	✔			✔	
262381	A	ProControl 1KS		✔		✔	
262382	A	ProControl 1KS		✔			✔
262383	A	ProControl 1KS			✔		✔

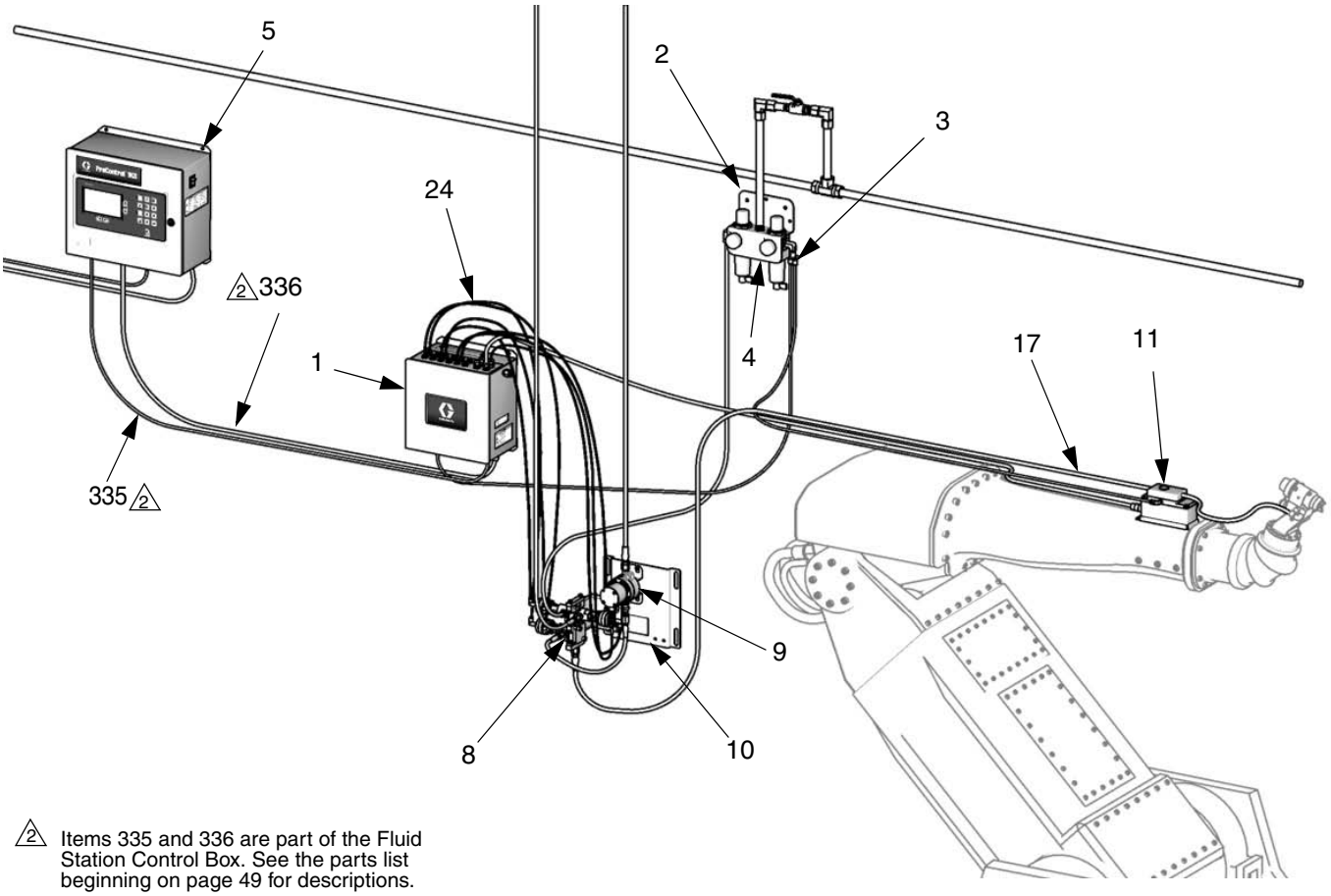


Part No. 262380, without meter or flow control

Part No. 262381, with G3000 meter, without flow control

Part No. 262382, with G3000 meter and flow control

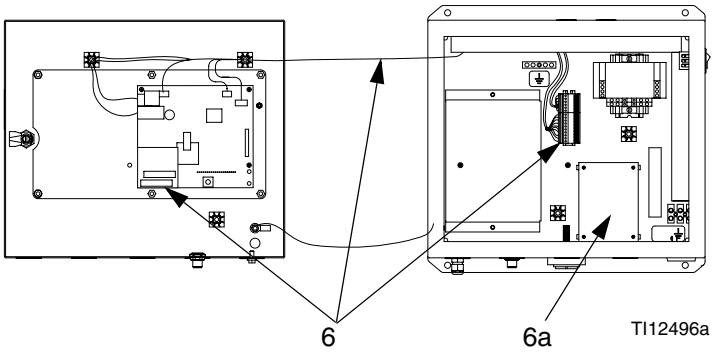
Part No. 262383, with Coriolis meter and flow control



△2 Items 335 and 336 are part of the Fluid Station Control Box. See the parts list beginning on page 49 for descriptions.

TI16328a

Detail of Automatic Upgrade Kit (6)



TI12496a

Part No. 262380, without meter or flow control

Part No. 262381, with G3000 meter, without flow control

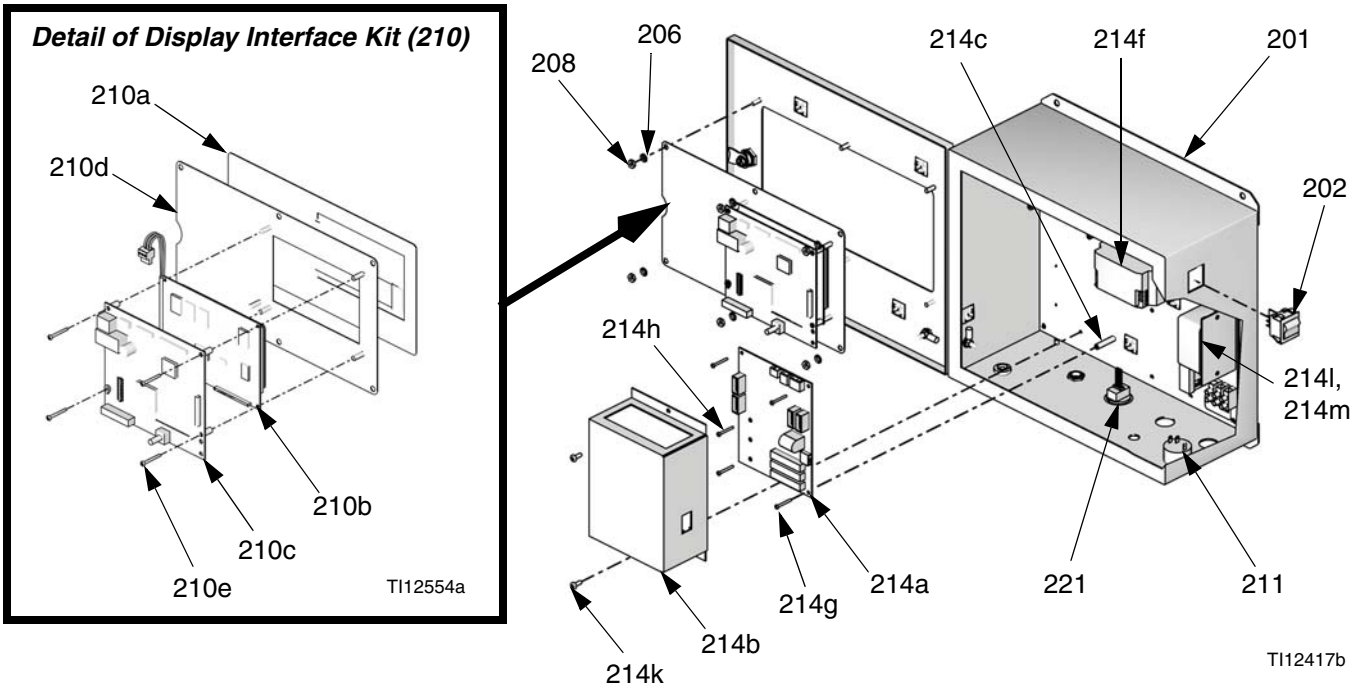
Part No. 262382, with G3000 meter and flow control

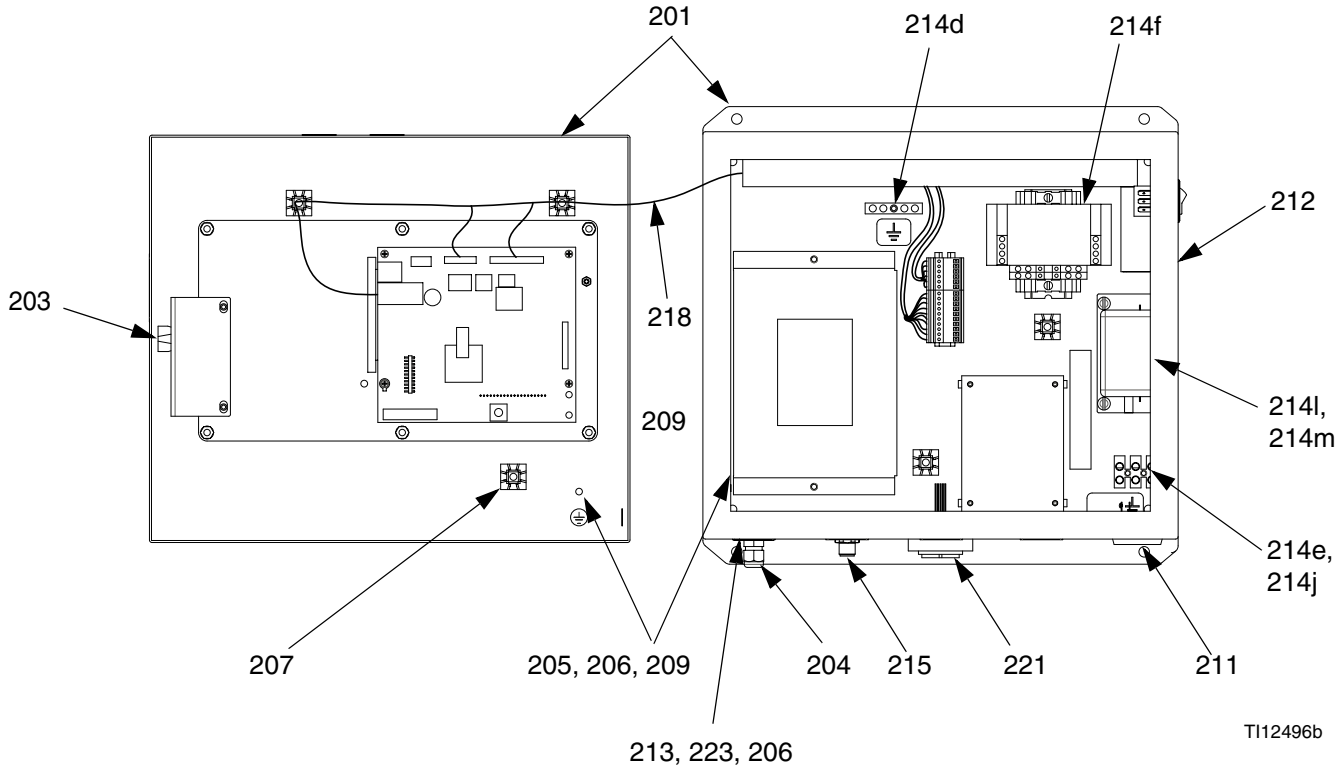
Part No. 262383, with Coriolis meter and flow control

Ref. No.	Part No.	Description	Qty
1	262363	CONTROL BOX, fluid station; see page 48	1
2	570122	MODULE, control, air	1
3	114158	FITTING, tube, Y-adapter	1
4	15G768	PLUG, tube fitting	1
5	277869	CONTROL/DISPLAY, EasyKey; see page 46	1
6	15V256	KIT, automatic upgrade; includes item 6a	1
6a	15V825	• KIT, board, discrete I/O; part of item 6	1
8	262364	VALVE STACK, dispense/purge, high pressure; see page 50	1
9		KIT, flow meter A	
	none	Model 262380	0
	16E955	G3000 flow meter; see manual 308778; Models 262381 and 262382	1
	15V806	KIT, Coriolis flow meter; see manual 313599; Model 262383	1
10		BRACKET, fluid station	
	none	Models 262380 and 262383	0
	16E841	Models 262381 and 262382	1
11		REGULATOR, flow control; see page 51	
	none	Models 262380 and 262381	0
	249849	Models 262382 and 262383	1
17		CABLE, flow control; connects flow control regulator to fluid station; 10 ft (3.0 m)	
	none	Models 262380 and 262381	0
	15G611	Models 262382 and 262383	1
24	n/a	TUBING, polyethylene, 5/32 in. (4 mm) ID	150 ft

EasyKey Controls

277869 EasyKey, with Display





277869 EasyKey, with Display

Ref. No.	Part No.	Description	Qty
201	n/a	CONTROL BOX, with display	1
202	116320	SWITCH, power	1
203	n/a	LATCH; includes item 3a	1
203a	117818	• KEY	1
204	111987	CONNECTOR, cord strain relief	1
205	110911	NUT, hex; M5 x 0.8	4
206	111307	WASHER, lock, external tooth; M5	9
207	n/a	HOLDER, tie	8
208	C19293	NUT, hex	6
209	194337	WIRE, grounding, door	1
210	15X779	KIT, display, interface; includes items 210a, 210b, 210d, and 210e; does not include 210c	1
210a	n/a	• MEMBRANE	1
210b	n/a	• GRAPHIC, display	1
210c	255767	• BOARD, EasyKey display	1
210d	n/a	• PLATE	1
210e	n/a	• SCREW; 4-40 x 1 in. (25 mm)	4
211	15D568	ALARM	1
212▲	15W776	LABEL, warning	1
213	223547	GROUND WIRE; 25 ft (7.6 m)	1
214	n/a	PLATE, application; includes items 214a-214m	1
214a	255786	• BOARD, barrier, IS; (includes fuses 15D979 and 114788, see page 34 for fuse location)	1
214b	n/a	• COVER	1
214c	117526	• SPACER	3
214d	119257	• BAR, ground	1
214e	114095	• BLOCK, terminal	1
214f	121314	• POWER SUPPLY; 24 Vdc; 2A	1
214g	n/a	• SCREW, machine, pan-hd; 6-32 x 3/8 in. (10 mm)	3
214h	n/a	• SCREW, machine, pan-hd; 6-32 x 1-1/2 in. (38 mm)	2
214j	n/a	• SCREW, machine, pan-hd; 8-32 x 3/4 in. (19 mm)	2
214k	n/a	• SCREW, machine, pan-hd; 10-24 x 3/8 in. (10 mm)	11
214l	123823	• FILTER, line, single-phase; 110/250 V; 3 A	1
214m	123824	• BRACKET, line filter	1
215	15V280	HARNESS, connection	1
216	15G569	LABEL, EasyKey inputs	1
218	15R642	HARNESS, wire	1
220	n/a	SOFTWARE, application	1
221	198165	CONNECTOR, RJ45, with bulkhead fitting	1
223	116343	SCREW, ground; M5 x 0.8	1
224	15G869	CABLE, ethernet, CAT5; 6 ft (1.8 m); to make web interface connection to a computer	1

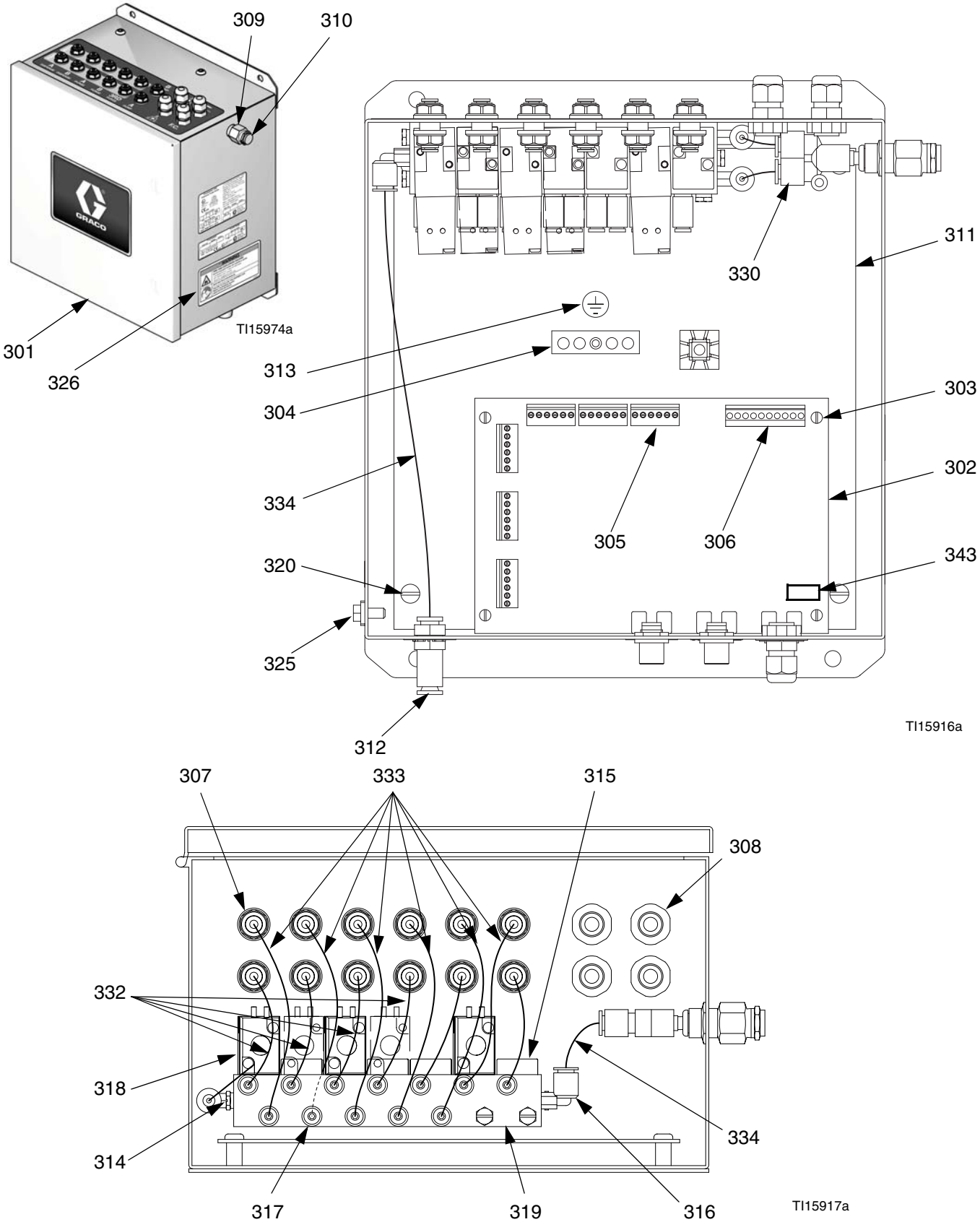
▲ *Replacement Danger and Warning labels, tags, and cards are available at no cost.*

Parts labeled n/a are not available separately.

Available Cables

CAN Cables		
Part No.	**Length ft (m)**	**Usage**
15U531	2 (0.61)	Option
15U532	3 (0.92)	Standard color change
15V205	6 (1.83)	Option
15V206	10 (3.05)	Option
15V207	15 (4.57)	Option
15V208	25 (7.62)	Option
15U533	50 (15.25)	Standard power
15V213	100 (30.50)	Option
Fiber Optic Cables		
Part No.	**Length**	**Usage**
15D320	50 (15.25)	Standard
15G710	100 (30.50)	Option

262363 Fluid Station Control Box



262363 Fluid Station Control Box

NOTE: Parts are shown on page 48, unless noted.

Ref. No.	Part No.	Description	Qty
301	16E380	ENCLOSURE	1
302	255765	BOARD, circuit	1
303	n/a	SCREW, machine, pan hd; 4-40 x 3/16 in. (5 mm)	4
304	119257	CONNECTOR, bar, ground	1
305	119162	CONNECTOR, plug, 6-position	6
306	116773	CONNECTOR, plug,10-position	1
307	121818	BULKHEAD, tube; 5/32 (4 mm)	12
308	111987	CONNECTOR, cord strain relief	5
309	112173	MUFFLER	1
310	C20497	FITTING, tube, bulkhead	1
311	16E434	PLATE, mounting, box	1
312	104176	BULKHEAD; 1/4 in. (6 mm) ID tube	1
313▲	186620	LABEL, symbol, ground	2
314	108382	FITTING, seal, o-ring; 10-32	5
315	120030	PLATE, blank, solenoid	4
316	120053	FITTING, tube; 10-32 x 1/4 in. (6 mm) OD tube	3
317	112253	CONNECTOR, male	12
318	121795	VALVE, solenoid, 4-way, intrinsically safe; 12 Vdc	4
319	15U725	MANIFOLD, solenoid	1
320	113783	SCREW, machine, pan hd; 10-32 x 3/8 in. (10 mm)	4
322	112925	SCREW, cap, button hd; 1/4-20 x 3/8 in. (10 mm)	2
325	116343	SCREW, ground	1
326▲	15G809	LABEL, warning	1
329	112512	FERRULE	4
330	114158	FITTING, tube, Y-adapter	1
332	n/a	TUBE, nylon, red; 5/32 in. (4 mm) OD; 4 ft (1.2 m)	A/R
333	n/a	TUBE, nylon, green; 5/32 in. (4 mm) OD; 5 ft (1.5 m)	A/R
334	n/a	TUBE, nylon; 1/4 in. (6 mm) OD; 2 ft (0.6 m)	A/R
335	15D320	CABLE, fiber-optic, twin; 50 ft (15.25 m); see page 44 for location	1
336	15U533	CABLE, CAN, intrinsically safe; 50 ft (15.25 m); see page 44 for location	1
343◆	123690	FUSE; 125 mA	1

▲ *Replacement Danger and Warning labels, tags, and cards are available at no cost.*

◆ *Replacing the fuse with a non-Graco fuse voids the IS system safety approval.*

Parts labeled n/a are not available separately.

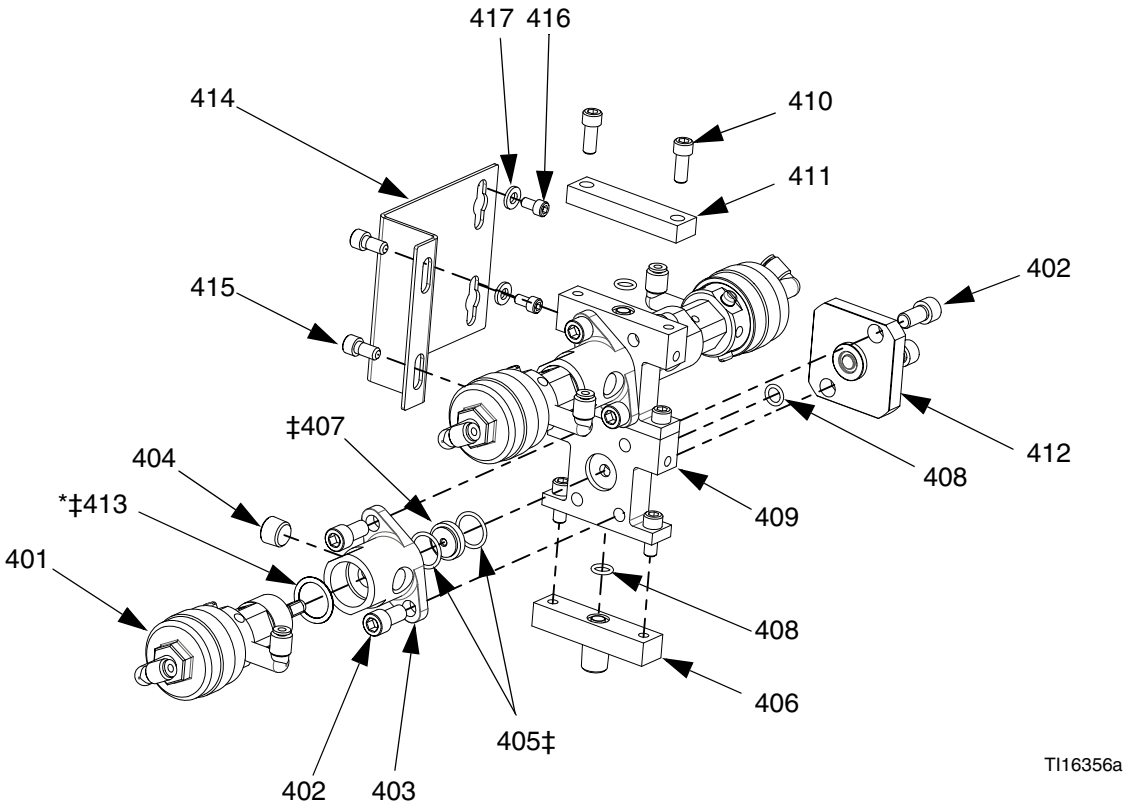
262364 Valve Stack

Ref. No.	Part No.	Description	Qty
401	15X303	VALVE, high pressure; includes item 413; see manual 312782	3
402	---	SCREW; 5/16-24 x 5/8 in. (16 mm)	8
403	15T436	ADAPTER, manifold	3
404	101970	PLUG, pipe	3
405‡	109450	O-RING; ptfe	6
406	15T869	MANIFOLD, fluid port	1
407‡	---	SEAT, valve needle; sst	3
408	110004	O-RING; ptfe	3
409	15T872	MANIFOLD, body	2
410	---	SCREW, cap, socket-head; 1/4-20 x 5/8 in. (16 mm)	6
411	15T871	MANIFOLD, end cap	1
412	15T873	PLATE, blank	1
413*‡	---	O-RING; ptfe	3
414	15U927	BRACKET	1
415	C19800	SCREW, cap, socket-hd; 1/4-20 x 1/2 in. (13 mm)	2
416	104371	SCREW, cap, socket-hd; 10-32 x 3/8 in. (10 mm)	2
417	104116	WASHER, plain; no. 10	2

‡ *Parts included in Valve Seat Kit 24A351 (purchase separately). (Optional Carbide Seat Kit 15U932 is available separately.)*

* *Part included in Seal Kit 15U933 (purchase separately). Kit includes additional parts; see Dispense Valve manual 312782.*

--- *These parts are not available separately.*



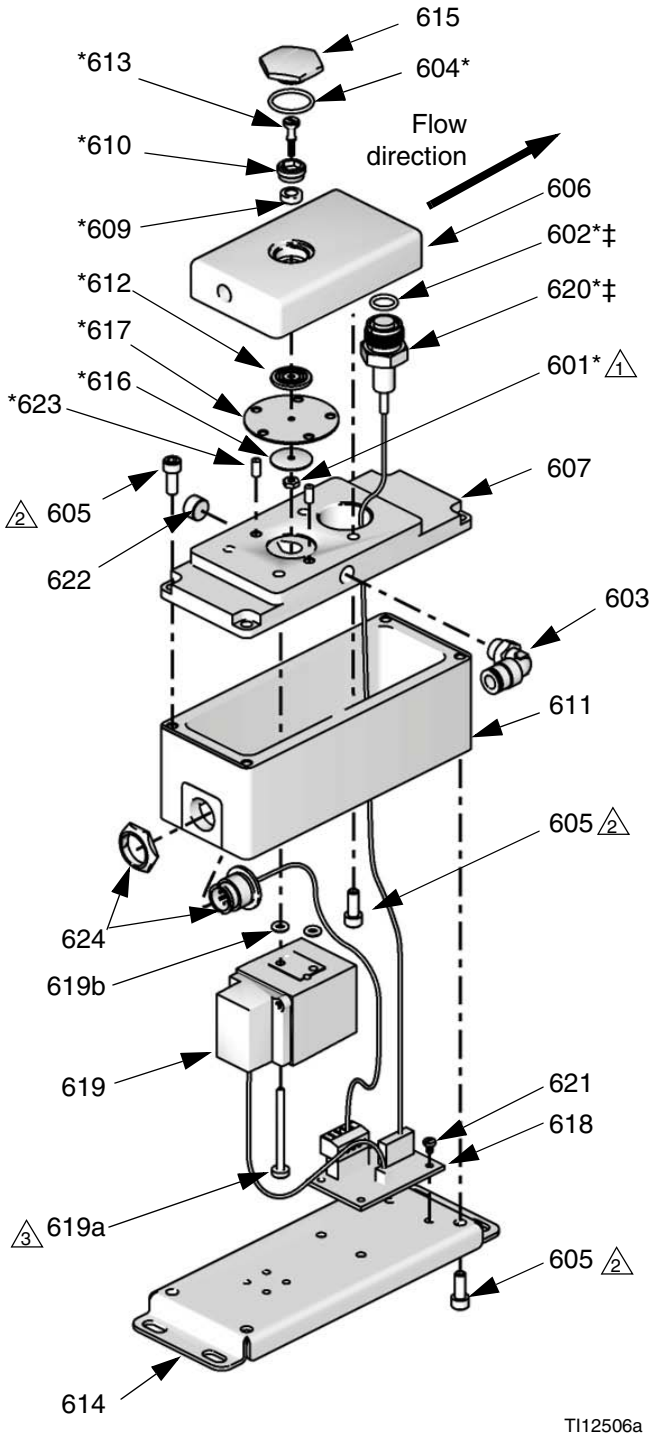
249849 Flow Control Regulator

Ref. No.	Part No.	Description	Qty
601*	102980	NUT, full, hex; 4-40	1
602‡*	n/a	O-RING; chemically resistant fluoroelastomer	1
603	112698	ELBOW; 1/8 npt(m) x 1/4 in. (6 mm) OD tube	1
604*	n/a	O-RING; chemically resistant fluoroelastomer	1
605	n/a	SCREW, cap, socket-hd; 10-32 x 1/2 in. (13 mm)	12
606	n/a	PLATE, fluid, regulator	1
607	15F799	PLATE, air, regulator	1
609*	n/a	SEAT, regulator	1
610*	n/a	RETAINER, seat	1
611	n/a	HOUSING, flow control	1
612*	n/a	SPACER, regulator	1
613*	n/a	NEEDLE, regulator	1
614	n/a	BRACKET, flow control	1
615	15F806	PLUG, regulator	1
616*	168881	GASKET; acetal	1
617*	178321	DIAPHRAGM, regulator	1
618	249179	BOARD, circuit assembly	1
619	120013	VALVE, proportional, V/P; includes items 619a and 619b	1
619a	n/a	• SCREW, cap, socket-hd; M3 x 0.5 x 44 mm	2
619b	106560	• O-RING, mounting, size 007	2
620‡*	n/a	SENSOR, pressure control	1
621	107295	SCREW, machine, pan-hd; 4-40 x 3/16 in. (5 mm)	4
622	104765	PLUG, pipe; 1/8 ptf	1
623*	192387	PIN, dowel	2
624	15G613	WIRE HARNESS, flow control	1

* *Parts included in Regulator Service Kit 15G843. Purchase separately.*

‡ *Parts included in Sensor Service Kit 15G867. Purchase separately.*

Parts labeled n/a are not available separately.



1 Torque to 8-10 in-lbs (0.9-1.1 N•m)

2 Torque to 30-40 in-lbs (3.4-4.5 N•m)

3 Torque to 5-7 in-lbs (0.6 -0.8 N•m)

Technical Data

Maximum fluid working pressure	*Base system:* 4000 psi (27.58 MPa, 275.8 bar) *Low pressure color change:* 300 psi (2.07 MPa, 20.6 bar) *Coriolis meter:* 2300 psi (15.86 MPa, 158.6 bar) *Flow control:* 190 psi (1.31 MPa, 13.1 bar)
Maximum working air pressure	100 psi (0.7 MPa, 7 bar)
Air supply	75 - 100 psi (0.5 - 0.7 MPa, 5.2 - 7 bar)
Air filter inlet size	3/8 npt(f)
Air filtration for air logic and purge air (Graco-supplied)	5 micron (minimum) filtration required; clean and dry air
Air filtration for atomizing air (user-supplied)	30 micron (minimum) filtration required; clean and dry air
Fluids handled	one or two component: • solvent and waterborne paints • polyurethanes • epoxies • acid catalyzed varnishes • moisture sensitive isocyanates
Viscosity range of fluid	20- 5000 cps*
Fluid filtration (user-supplied)	100 mesh minimum
Fluid flow rate range*	
G3000, G250 Meter	75 - 3800 cc/min. (0.02-1.00 gal./min.)
G3000HR, G250HR Meter	38 - 1900 cc/min. (0.01-0.50 gal./min.)
Coriolis Meter	20 - 3800 cc/min. (0.005-1.00 gal./min.)
S3000 Solvent Meter (accessory)	38 - 1900 cc/min. (0.01-0.50 gal./min.)
Fluid inlet sizes	
Flow Meter	1/4 npt(f)
Dose Valve/Color Valve Adapters	1/4 npt(f)
Fluid outlet size (static mixer)	1/4 npt(f)
External Power Supply Requirements	85 - 250 Vac, 50/60 Hz, 2 amps maximum draw 15 amp maximum circuit breaker required 8 to 14 AWG power supply wire gauge
Operating temperature range	41- 122° F (5-50° C)
Environmental Conditions Rating	indoor use, pollution degree (2), installation category II
Noise Level	
Sound pressure level	below 70 dBA
Sound power level	below 85 dBA
Wetted parts	303, 304 SST, Tungsten carbide (with nickel binder), perfluoroelastomer; PTFE

* Dependent on programmed K-factor and application. The maximum allowable flow meter pulse frequency is 425 Hz (pulses/sec). For more detailed information on viscosities, flow rates, or mixing ratios, consult your Graco distributor.

See individual component manuals for additional technical data.

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

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Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

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Original instructions. This manual contains English. MM 3A1164

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